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PEDIATRICS IN GENERAL PRACTICE*

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PEDIATRICS as a specialty is a rather young off-spring of an aged parent—general medicine. Whether or not the birth of this child of venerable parentage is to be deplored we need not try to answer; certainly it is a robust youth and blessed with a large number of still younger siblings, all clamoring for recognition, for with the great widening of the frontiers of medical knowledge that the last fifty years have seen, and with the tremendous enrichment of these fields of knowledge that each year brings, it is obvious that no single mind, even if Oslerian in capacity, can encompass all there is to know in medicine—even all there is of practical, maternal value.

Specialties in the beginning, I presume, grew out of special flairs or interests. One practitioner was particularly skilled in surgery; one made a point of increasing his proficiency in obstetrics; one was particularly successful in his handling of the feeding problems of infancy, and so it went, these special interests increasing in importance until finally they blossomed out as full-fledged specialties, impressive to the layman because he thinks they mean, as they should mean, increased proficiency; attractive to the physician for various reasons; most legitimately because of his increased interest in the particular field, but also, it must be confessed, because of the opportunities for greater fees, and sometimes because of actual incompetence to meet the larger problems of general practice.

These specialties of practice with which, I believe, we are overridden, are mainly based on the anatomical divisions of the body. Pediatrics is unique in that its opportunities and limitations are determined only by time. It is, indeed, general practice confined to an age group, and a popular type of practice as compared to the other possibilities along this line, for its adherents are many, whereas I have yet to hear of a practitioner confining his activities to the infirmities of age. The child is at the mercy of a stubborn world; the old man is presumably able to shift for himself and apparently does not require the services of a specialist to oversee his waning years.

The pediatrician, nursing bottle in hand, has raised himself on his own formulae, as it were, into the position of a specialist, for his need first became apparent when it became apparent that a former infant mortality was unnecessary. Having become a specialist he has justified his existence as such by demonstrating that the physiology of the growing child is different from that of the adult and that his reactions in health and during disease are different.

He has further improved his opportunities by becoming a pioneer in the recently developed field of individual preventive medicine, and without the slogan has for years been quietly performing the periodic health examination, which is the latest rallying cry of the health enthusiasts, both lay and medical.

Even including certain points of departure from practice among adults, pediatrics remains only a very complete, if miniature, division of general medicine, and every general practitioner should not only consider it his prerogative to practice pediatrics, but should consider it his duty to practice it well, and without the aid of the proprietary food manufacturers, whose literature falls upon our desks like autumn leaves upon a lawn; for pediatrics is mostly common sense, observation, and the remembrance of a few simple rules.

Lest I be accused of cutting away the limb on which I stand, however, let me hasten to say that for convenience's sake an average number of pediatricians might be left undisturbed, for it is well to have someone with patient ears attuned and accustomed to the wails of young mothers raising their voices in a wilderness of constipation and colic.

The general practitioner, caring for the youngest of his flock, should bear in mind certain obvious but often neglected points. The standards of physical examination in infancy are different from those in the adult and, particularly as regards chests, are treacherous. Fatigue in the growing child should be recognized as a factor where weight gain is unsatisfactory, and tonsils, like the fruits of the field, should be plucked only when ripe and ready for the plucking. Their removal is frequently a necessity in the interests of health preservation, but at least let them have the same benefits that

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the law allows to criminals and be considered innocent until adjudged guilty; when possible let them remain in situ until the fourth or fifth year and let a decision in favor of removal be based on mechanical obstruction due to unusual size, a history of recurrent infections with the presence of tonsillar glands, or other infection in the body which might presumably be due to diseased tonsils.

In the case of unexplained fever of any duration, many an awkward situation has been saved by careful and repeated examination of the urine in search of a diagnosis of pyelitis, and by careful inspection of the ear drums, for otitis media is the most frequent sequela of the common cold in infancy, and an early incision may save many days of drainage and possibly mastoiditis, a dreaded catastrophe that may occur at any age.

A cataloguing of all the diseases peculiar to infancy would, of course, be encyclopedic in scope, and after all text books are available and are intended to be used. A few diseases deserve mention in passing because they may be overlooked, because the differential diagnosis may be obscure, or because special lines of treatment may be indicated.

Hemorrhagic disease of the newborn is occasionally encountered with its obvious symptoms of bleeding from cord, from gastrointestinal or from urinary tract. Intraeranal hemorrhage may result from this condition and cephalhematomata may reach enormous size. The only treatment, of course, is the introduction of blood by transfusion, into the peritoneal cavity, or into the muscle; treatment that may have to be repeated but is almost surely specific. Avoid incision of cephalhematomata as they are very liable to become infected if so treated.

Pronounced, repeated and projectile vomiting in early infancy, particularly if a tumor is felt in the abdomen, and particularly if gastric peristalsis is visible, is most probably due to stenosis of the pylorus and operation should not be long delayed if weight loss is continuous. If the diagnosis between hypertrophic stenosis and pylorospasm is in doubt, medical treatment may be instituted at first—small feedings, if possible of breast milk, gastric lavage and atropine sulphate, in 1/1000 grain doses just before feedings, cautiously increasing from day to day. Fluids must be maintained, by hypodermoclysis if necessary. If the condition is not relieved in a few days or the diagnosis of stenosis is made, the muscle-splitting operation should be performed at once.

When bloody stools are passed and vomiting becomes a pronounced feature in a child previously well, at least think of intussusception. When collapse is imminent with stereoraceous vomiting, and a sausage shaped tumor is palpable in the abdomen and perhaps by rectum, the diagnosis is certain and it may be too late

to save the patient. Immediate laparotomy is the only treatment, although I have seen two cases recover spontaneously in which intussusception was probably the correct diagnosis.

Lobar pneumonia is not a disease peculiar to childhood but I would like to warn against the difficulties that may attend the differential diagnosis between this disease and appendicitis, for the onset of pneumonia is frequently marked by abdominal pain as the only symptom, and everyone who has spent any length of time in a large hospital has seen children operated on for appendicitis when pneumonia was the only pathological condition present. Often the only suspicious points are that the pain and tenderness are too acute and spasm not sufficiently marked, the white count is too high and the temperature too elevated, even in the absence of pulmonary signs. These cases merit x-ray of the chest and watchful waiting rather than immediate operation.

The feeding problem of infancy is really the problem that makes pediatrics a well defined specialty. If all infants should be breast fed this problem would scarcely exist, but the bottle must often be resorted to; often the question arises as to whether or not artificial feeding is indicated in a particular case; and even breast feeding itself has its difficulties that must be met and straightened out if possible. Given a healthy mother and an infant capable of taking the breast our first obligation is to promote the secretion of milk, and this can best be accomplished by regular and complete emptying of the breasts, by the infant if possible, if not, by the pump or by manual expression. The majority of mothers are capable of nursing their infants for an appreciable number of months, and it is our duty to see that proper measures are taken to achieve this object.

Ordinarily the newly born infant may go to the breast within twelve hours after birth and thereafter at regular intervals. If he is moderately robust the four hourly schedule may be instituted from the start, giving both breasts, the total feeding to be accomplished in fifteen or twenty minutes. Within a few days after birth, once a satisfactory gain in weight is established, the late night feeding may be omitted reducing the number of feedings to five; of practical importance to mother and infant, both of whom need as much rest as they can obtain. If the weight gain is not satisfactory or the infant shows signs of hunger it is well to ascertain the amount of milk he is getting by weighing before and after nursing for a twenty-four hour period. If the amount taken is not sufficient for his needs—about 3 ounces per pound of body weight in the twenty-four hours—supplementary or complementary bottles may be given, although this is liable to become the first step in the weaning process. When possible nursing should be continued for eight or nine months, one bottle feeding often being intro-

duced at three or four months to accustom the baby to the bottle and to allow the mother more relief from her duties.

Underfeeding is the commonest cause of disturbance in the breast fed infant and this may be accompanied by colic, constipation and vomiting, the last named being due to reflex nervousness in a wakeful, irritable child. Weighing before and after feeding will give the clue to the cause of the condition and the appropriate treatment can be instituted. Overfeeding may be corrected by shortening the nursing periods or giving water before the breast is taken. Rarely is disturbance in digestion due to the quality of the milk, and analysis of the breast milk seldom gives information of value. It must always be borne in mind that digestive disorders may be purely functional; the reaction of an overwrought infant to a disturbing environment—a nervous mother, too much attention and too little rest.

The care of premature infants is the care of all infants carried to the last degree. The most important principles to bear in mind are maintenance of body heat, protection from infection, prevention of fatigue and a proper food properly given. Breast milk is of particular importance in prematurity, given by bottle, Breech feeder, medicine dropper or gavage; rarely oftener than every three hours, keeping the amounts given well within the limits of retention. If breast milk is for any reason unobtainable, many digestible substitutes may be found, the amount and manner of feeding being of greatest importance. Most premature infants will thrive satisfactorily on boiled whole milk dilutions, lactic acid milk, or various of the dried milk preparations.

Any resumé of the methods of the various schools of infant feeding would serve only to add to the general confusion concerning this subject. Top milk mixtures and percentage feeding are still employed and have their advocates, but in general whole milk dilutions are most widely used. The basis on which these formulae are constructed is relatively simple, depending on protein, water and caloric needs, based on the weight and age of the infant. The infant's minimum requirements of one and one half grams of protein per pound of body weight in the twenty-four hours are supplied by one and one half ounces of whole milk per pound, two ounces per pound being considered ordinarily an upper limit. Water is added to fulfill the requirements of three ounces of total fluid per pound in the twenty-four hours, up to a limit of 32 to 36 ounces, not generally exceeded. Some form of sugar reckoned roughly at 120 calories per ounce is added to fulfill the caloric requirements, ranging from 40 to 55 calories per pound or higher, the caloric value of whole milk being accepted as about 20 per ounce. I customarily add an ounce or two of water in

excess of the total quantity desired, to allow for evaporation, and boil the whole mixture together, over the open flame, for about five minutes. The various ethical dried milk preparations are often found of value and are simple to make ready, as the addition of proper amounts of water is all that is necessary. In the treatment of diarrhoeas and in malnutrition Marriott's artificial lactic acid milk is very serviceable, generally being prescribed without fat and without added sugar in the first named condition.

In the preparation of these formulae the milk is first boiled and then cooled and to it is added slowly U.S.P. lactic acid No. IX, with constant stirring, in the proportion of one dram to the pint of milk. Corn syrup is used as an added sugar in the proportion of one ounce to the pint. This milk may be used undiluted. These formulae, of course, are based on standard requirements and may be varied to suit the individual case.

For both breast and bottle fed babies, strained, well-cooked cereal and green vegetables may be added to the diet by the end of the sixth month, later adding the starchy vegetables, bread stuffs, scraped beef and chicken. Broths and soups are generally advocated at this age but it seems to me that they are not usually necessary and simply add to the complexity of preparing the diet.

The "second summer" is often referred to as a danger period in the infant's life, and that this was formerly the case we may take for granted. After the months of early infancy were passed there was certainly a relaxation in the scrupulous care that babies were accorded, and strict purity of food and sterility of utensils was no longer insisted on. Furthermore, in days when less attention was paid to milk production and distribution than now and before pasteurization had come into vogue, this ideal culture medium was often subject to gross contamination in hot weather. Bovine tuberculosis, moreover, is always present among our cattle, and for these various reasons I am inclined to insist on the absolute sterilization of milk by boiling.

Teething is, for the physician, a happy accompaniment of childhood in that it furnishes a final excuse, from which there is no appeal, for all the otherwise unaccountable vagaries of health and behavior. When we consider that a child spends, in cutting teeth, much of his time between the age of 6 months and 2 years this seems no mean advantage for the harassed adviser. In questions of real pathology, however, we must search farther than the jaws, for the irritation of teething is rarely more than a final straw in the precipitation of disaster.

As the infant grows older his medical adviser, if we may refer to the family physician in such formal terms, should not relax his vigilance, although the occasions for seeing the

healthy patient will become less frequent. The age from 2 to 6 has been rightly termed the "Neglected Age", when the child is no longer subject to the strict supervision of the babe in arms, and has not yet come under the careful scrutiny of the school physician and nurse. It is during these years that faulty habits of hygiene, of posture and of diet may be formed. Much good may result if semi-annual examination of the patient and consultation with the mother are insisted upon, and the theory of the periodic health examination is put into practice. If it is possible to continue this supervision of health through the school years, the better off the child should be.

Prevention is rapidly becoming the key note of modern medicine and nowhere is it more applicable than in pediatrics, whether practised by the general practitioner or by the pediatrician. I have mentioned the sterilization of milk and will reemphasize it, partly because it is rendered more digestible by boiling, but particularly because it is the surest way to prevent intestinal disorders and tuberculosis of bovine origin in the child. Whether or not the milk has been boiled, with possible subsequent loss of vitamin content, scurvy should be guarded against by the early daily administration of orange or tomato juice—even with the breast fed, for breast milk itself may lack protective properties; and rickets and tetany should be prevented by the regular use of a potent cod liver oil, and when possible by sun baths. Orange juice should be commenced by the end of the second month and cod liver oil at about the same time, beginning the latter with one half to one teaspoonful daily and increasing the dose until at the age of six months 3 teaspoonfuls are being taken. Still more efficacious than cod liver oil in the prevention of rickets is the daily sunbath, summer and winter, remembering that the sun's rays must impinge upon the skin and that passage through glass renders them valueless. Intelligent mothers will find it possible to give the exposures in an open south window even in the winter time. In summer time, of course, over-exposures are to be avoided until the skin has become sufficiently pigmented.

The relative anemias of late infancy can best be avoided by the early addition to the diet of green vegetables, prune pulp, and grated egg yolk. Egg yolk is also of value for its antirachitic properties. Liver soup has been advocated as a remedy for anemia but I should not criticise the infant who rejected it on the basis of appearance alone.

It has been my custom to recommend small pox vaccination at least by the end of the first year and again at school age, and the injection of toxin-antitoxin without a preliminary Schick test at the age of one year. This is always followed by the Schick test after 6 months have

elapsed, in order to determine success or failure in immunization. This subsequent Schick test should be considered, an important integral part of the process of immunizing against diphtheria, and a positive test should be followed by repeated injections of the immunizing substance until a negative test is produced. I have found it of no disadvantage to administer toxin-antitoxin and vaccinate against small pox at the same visits. In the present state of our knowledge these are the only routine immunological procedures to be recommended.

We are all accustomed to the differences between adults and small children in their reactions to disturbances of the normal physiology and we know how difficult is prognosis in infancy. The child more readily runs a high temperature and his prostration may be great, but when the acute process has subsided the rebound itself is equally striking. We are accustomed to the degree of fever and prostration that may accompany a relatively simple infection, such as a pharyngitis, and this may frequently throw us off our guard and result in our failure to recognize the signs of a more serious infection such as otitis media, pyelitis, pneumonia or even tuberculosis. Any of these acute infections may be ushered in with vomiting and diarrhoea, and particularly in infants these symptoms are common reactions to any febrile condition. Water loss with accompanying intoxication and acidosis may be a serious and rapidly appearing complication of any infection or any disturbance that is marked by vomiting and diarrhoea. Extreme prostration is the rule, the eyes are sunken and the fontanelle depressed, and the skin changes from its normal condition of elasticity to one in which it is doughy and plastic, returning slowly to its position when a fold is "picked up" between thumb and forefinger. Under these conditions an immediate replacement of water is imperative, and if it cannot be given or retained by mouth, it should be given as normal salt or 5 percent glucose solution under the skin, into the peritoneal cavity, or intravenously. In severe cases with malnutrition transfusion may give the best results.

Convulsions, the *bête noir* of the mother, not infrequently accompany high fevers and are even ascribed to such simple sources of irritation as teething. Where an immediate cause of the convulsions is not apparent, one should be sought in ears, urine, or intestinal tract. I am of the opinion, however, that these immediate causes are in general only precipitating factors and that the underlying cause is, more often than we think, latent tetany or spasmodophilia. Some slight experience has seemed to indicate that the blood calcium is likely to be below normal in these cases and that, in addition to any appropriate treatment of the emergency a possible underlying factor of tetany

should be treated by calcium chloride and cod liver oil and sunlight.

In conclusion let me repeat that the practice of general pediatrics is properly one of the functions of the family physician. The over-specialized trend of modern medical instruction and the over-rapid growth of the specialties in

practice have seemed to me to exhibit a deplorable tendency towards the close fencing of small lots. I believe that the general practitioner, recognizing his own qualifications even as he admits his limitations, should post his own larger home grounds with signs that read "No Trespassing".

SOME UROLOGICAL CAUSES OF ABDOMINAL PAIN*

BY J. DELLINGER BARNEY, M.D., F.A.C.S.

It is perhaps not yet fully appreciated how frequently abdominal pain may be due to some lesion of the kidney or ureter. The fact that this pain may appear to be directly or indirectly connected with the appendix, gall bladder or gastro-intestinal tract, or with the organs of the female pelvis, does not necessarily exclude the kidney or ureter as its possible source. Nor does a persistently normal urine and a negative x-ray exclude these latter organs from consideration. It is quite as possible for abdominal tumors of obscure nature to have their origin in the kidney as in other organs. In more instances than is now the case the possibility of a urological lesion should be considered in the differential diagnosis. The urologist, by means of the special diagnostic measures at his command, and in the light of a now very considerable experience, can determine the status of kidneys or ureters with gratifying accuracy, as shown by the fact that in a recent year there was an error of only 4% in the pre-operative diagnoses in the Urological Department at the Massachusetts General Hospital. Closer cooperation between the general surgeon and the urologist is therefore highly desirable.

Goldstein and McBee (*W. Virginia M. J.*, Aug., 1925) have recently stated that 20% of abdominal operations performed by various surgeons have resulted in mistaken diagnoses, and it is reported by Blesh (*Southwestern Med.*, Feb., 1925) that 40% of 5000 appendectomies were unrelieved of their symptoms by operation. The experience of the writer has been that of other observers, namely, that in from 15% to 20% of lesions of the kidney and ureter, chiefly due to calculi, previous operation has been performed, without relief, for other abdominal conditions. In many of these little or no pre-operative investigation of the urinary tract was made. As Goldstein and McBee say, "In obscure abdominal conditions when it has been demonstrated that the genito-urinary tract is free from pathology then, and not until then, is one justified in making an attack upon the intestinal tract."

The purpose of this communication is to call attention to some of the more obscure and less

familiar conditions of the kidney and ureter which may and often do cause confusion. The diagnosis is frequently made difficult by the fact that the pain may closely simulate that caused by disease of almost any intra-abdominal organ. The surgeon may also be thrown off his guard by a normal urine examination and a negative roentgenogram, not realizing that such data in and of themselves do not necessarily exclude the kidney and ureter from consideration.

Stricture of the ureter has come into prominence in recent years as a frequent cause of abdominal pain, especially in women. It may, therefore, often lead to unnecessary surgery. While strictures of the ureter are not as uncommon as has been supposed, and while doubtless many are still being overlooked, I believe it is also true that they have been given far more emphasis than is warranted by the facts. In this connection a case operated upon by the writer is of interest, although it is realized that the diagnosis was not obscure or difficult.

The patient was a man of 48 who had complained of intermittent sharp pain in the left abdomen for three or four years. He also complained of frequency, dysuria and occasional hematuria. The urine contained pus and blood and abdominal examination showed a tender and apparently enlarged left kidney. Roentgenograms of the urinary tract showed nothing suggesting calculi, but did show a somewhat enlarged left kidney. Cystoscopy, with catheterization of the ureters on two occasions, showed pus and blood in the left kidney urine but no organisms and no tubercle bacilli either in the smear or by two guinea pig tests. A left ureteropyelogram showed a very marked stricture of the ureter just below the kidney with dilatation of the ureter above and below the point of stricture. (Figure 1). At operation these findings were confirmed. The kidney was removed. Careful examination by the pathologist showed no evidence of tuberculosis or other cause for the formation of the stricture of the ureter. While this case is not as obscure as some, it illustrates the point that simple x-ray and abdominal examination may fail to reveal the conditions present.

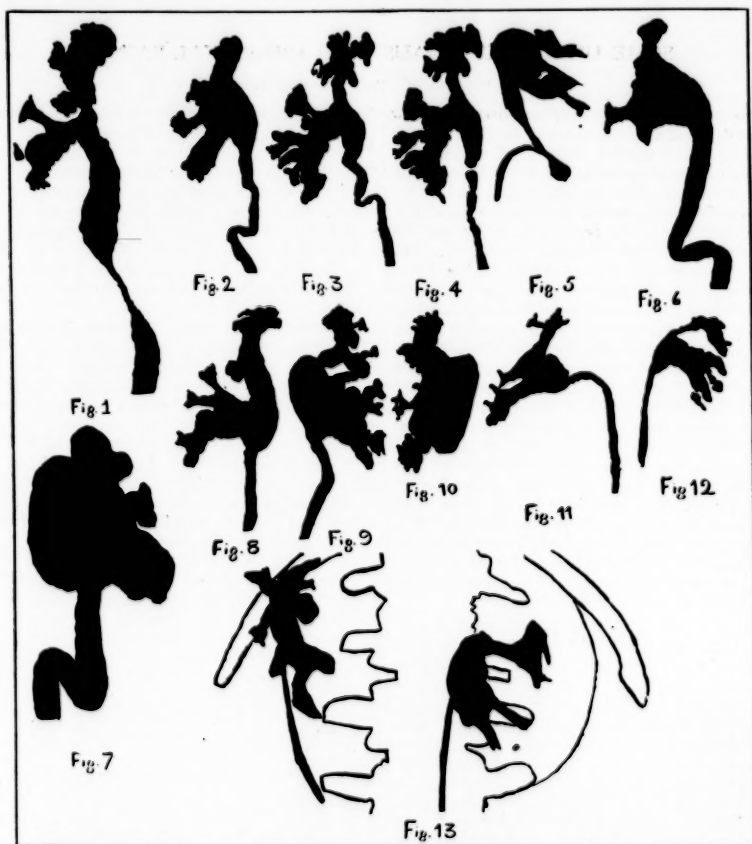
Since we have come to recognize that the

*Read at a meeting of the New Bedford Medical Society, April 12, 1926.

ureterogram may be of quite as much importance as the pyelogram, certain conditions of the ureter hitherto unrecognized, have assumed importance in the list of causes of abdominal pain. Only recently has the ureteral kink been recognized and established as a clinical entity. The etiology of this condition is not yet entirely

ureter, between the brim of the bony pelvis and the kidney.

A middle-aged laboring man entered the Hospital complaining of frequent and very severe attacks of pain in the left upper quadrant. These attacks were sometimes accompanied by nausea and vomiting and by frequen-



The above silhouettes are tracings from films of pyelograms and ureterograms. For the sake of simplicity the bony structures have been omitted except in Figure 13. In this case the outline of the vertebral column and of the 12th ribs has been inserted, with the outline of the kidney shadow on both sides. In all cases the patient is being viewed from the rear. It should also be remembered that the silhouette does not enable one to see the various details of structure which one can see in the film itself.

clear, but the writer's experience has shown it to be due on the one hand to various degrees of renal ptosis, and on the other to what is apparently either a redundancy of the ureter or to one or more herniations of the sheath by which it is normally supported. Generally speaking these kinks occur in the upper half of the

ey of urination. Abdominal examination showed tenderness in the left upper quadrant, not definitely of the kidney, and neither kidney could be palpated. The x-ray was negative in every respect and the urine showed only a rare white cell. Gastro-intestinal studies showed nothing abnormal. A left pyelogram and ure-

terogram showed a marked S-shaped kink in the ureter, just below the kidney. (Figure 2.) Operation was performed by a general surgeon who found no evidence of a kink or other abnormality of the ureter. A partial suspension of the kidney was done as it seemed to be rather more movable than normal. Relief of pain has been complete but no subsequent investigation of the ureter has been made.

A second case was seen by the writer shortly after this. The patient was a young man who had been operated for a left inguinal hernia several years previously. He entered the Hospital complaining, as did the previous case, of severe attacks of pain in the left upper quadrant, accompanied by nausea and vomiting. Here also the examination by abdominal palpation, x-ray and gastro-intestinal study revealed nothing. The urine, however, contained a little blood in addition to an occasional leucocyte. A left pyelogram and ureterogram showed as in the previous case a well developed double kink in the ureter just below the kidney. (Figure 3.)

At operation I exposed the ureter, being careful not to disturb its relations. Through a catheter which had been previously passed a short distance up the ureter, sterile water was then injected. The kink was seen to be reproduced as in the ureterogram and was apparently due to herniae in the fibrous sheath of the ureter at the site of the kink. Although the kidney was neither unduly movable nor low in position it was found that when its lower pole was held against the abdominal wall the ureter was put on sufficient tension to obliterate the kink entirely. Accordingly the kidney was partially decapsulated and sutured in this favorable position. A ureterogram some weeks later showed the ureter to be pursuing a normal course (Figure 4, the segmentation of the shadow is probably due to peristaltic waves) and the patient has been entirely free from pain. It is quite possible that a similar investigation during the operation on the first case reported would have demonstrated the kink as in this case. I believe that such an investigation should be made in all these cases, as otherwise one may entirely miss the point at issue. Also, it is important to realize that with few exceptions the passage of the ureteral catheter to the kidney is not necessarily interfered with by the presence of a kink, the reason being that the ureter, in early cases at least, is not firmly anchored in its abnormal position by adhesions and is, therefore, easily straightened out by the catheter as it passes through. This point illustrates the value of the ureterogram as distinct from the pyelogram, and it is also important to remember that the value of the former lies entirely in the injection of the ureter with the catheter almost completely withdrawn. On the other hand, even when the ureter is sharply

kinked and bound down by adhesions, the catheter may easily find its way through to the kidney as shown in Figure 5. This patient complained only of a dull back ache and were it not for the presence of much pus in the urine no lesion of the urinary tract would be suspected.

While for a time no noteworthy changes may be found in the size or shape of the kidney pelvis, or in that of the ureter, except the kink, the faulty drainage of the renal pelvis produced by the kink is followed by infection, dilatation and adhesions. The end result is more or less complete destruction of the kidney. A long-standing case of this sort is seen in Figure 6, where there is considerable damage to the pelvis and calices and moderate dilatation of the ureter. A still more advanced case is shown in Figure 7. Here there was a history of right-sided pain of long standing. The urine, however, contained only a few pus cells and without careful urological investigation one might have easily interpreted the symptoms as being due to appendicitis or gall bladder disease. The discovery of an almost negligible function in the right kidney, together with the markedly dilated pelvis and ureter left no doubt as to the origin of the symptoms. At operation a thin walled, sacculated, adherent kidney with a markedly dilated and adherent ureter was removed. The kink was found in situ, just as shown in the ureterogram, with its loops adherent to one another like coils of intestine.

Another cause of abdominal pain of renal origin is that produced by aberrant vessels of the kidney so placed as to interfere with its drainage with more or less constancy. While the presence of supernumerary and aberrant blood vessels of the kidney has been recognized for years by anatomists and surgeons it is only comparatively recently that their clinical significance has been realized. These vessels are now recognized by the urologist as being a frequent and exceedingly efficient cause of hydronephrosis, and he is able to demonstrate their presence before operation with increasing accuracy. The fact that they may produce renal colic, the pain of which may resemble that due to lesions of other abdominal organs, that they may be accompanied by a normal urine and that a simple clinical and x-ray examination is negative may lead to the performance of various abdominal operations which fail to give the desired relief. This is particularly true when the right kidney is involved.

The pyelogram of such a case is shown in Figure 8. This occurred in a young, strong man who had been operated for appendicitis 7 years previously but who subsequently had had several attacks of generalized abdominal pain. These attacks were always accompanied by nausea and vomiting and were often severe enough to require morphine. There were never any urinary symptoms. Several x-rays had

been taken but none revealed the cause of symptoms. Cystoscopy had been performed by a urologist in another state, but he had been unable to make a diagnosis. Examination by me showed nothing abnormal in the abdomen. The left kidney was palpable but not tender and evidently not enlarged. The urine was normal. Simple x-ray showed nothing remarkable. The performance of a left uretero-pyelogram showed a sharp angulation of the uretero-pelvic junction with a definite break in the shadow at this point. The pelvis was somewhat dilated. The diagnosis of hydronephrosis due to an aberrant blood vessel was made. At operation the kidney was found to be somewhat enlarged and rather low in position. Crossing the uretero-pelvic junction there was a large vein which very obviously produced obstruction to the ureter at this point. The vein was divided between ligatures and the kidney decapsulated and suspended in a normal position. Nearly a year later the patient reported himself as entirely relieved of symptoms.

A similar case was seen about two years ago in which a renal calculus complicated the situation. This also occurred in a young healthy man, who had had several attacks of severe pain in the right upper quadrant. X-ray showed a dense shadow the size of a dime in the region of the pelvis of the right kidney. The diagnosis of calculus was confirmed by a pyelogram, the silhouette of which is shown in Figure 9. While the shadow of the stone cannot be seen it will be noticed that there is a rather sharp angulation at the uretero-pelvic junction. It is fair to say, however, that the possibility of an aberrant blood vessel was not considered. At operation two large veins and an artery were found to be crossing the ureter at its junction with the pelvis in such a way as to unquestionably cause obstruction in certain positions of the kidney. After removal of the stone through a pyelotomy incision the kidney was decapsulated and sutured to the abdominal wall in such a position that the aberrant vessels could not interfere with its drainage. The vessels were not divided as they obviously carried on the circulation of a large portion of the kidney. The patient is now entirely comfortable, two years after operation. Were it not for the presence of a shadow in the x-ray suggesting renal calculus the diagnosis of appendicitis or some other abdominal condition might easily have been made, leading either to operation or to an unnecessary prolongation of symptoms. The presence of aberrant vessels is often only a matter of inference, even with careful technic. Mistakes in their diagnosis are quite as likely to be made one way as the other.

In connection with this patient, it is worth noting that I have recently operated upon his sister for the same condition, i. e., aberrant blood vessels interfering with drainage of the

right kidney. The pyelogram of her left kidney, together with the nature of the symptoms point strongly to the probability that a similar condition will be found there. This woman had already had an appendectomy and a hysterectomy by another surgeon.

Sometime ago I operated upon another woman, of middle age, who complained of boring pain in the left lower quadrant. All other examinations revealing nothing, she was cystoscoped, and a pyelogram made, first of the left kidney, then of the right. The urine from each kidney showed only a rare leucocyte. The left pyelogram is shown in Figure 10. It will be seen that the pelvis is considerably dilated and the calices blunted—certainly a hydronephrosis. An almost identical pyelogram was obtained on the right side. The possibility of the presence of aberrant blood vessels was not seriously considered but should have been. Operation on the left kidney showed a large artery and two veins causing very definite obstruction at the uretero-pelvic junction. As it was thought inadvisable to divide these vessels, owing to their large size, the ureter was divided at its junction with the renal pelvis, the incision in the latter closed and the ureter anastomosed to the pelvis at a point anterior to the aberrant vessels in a position where they could not interfere with drainage. In spite of what appeared to be satisfactory technic the anastomosis leaked, infection occurred and I was obliged to remove the kidney a few days later. The patient has now but one damaged kidney. In retrospect it now seems as if it would have been wiser to have either divided the vessels, taking the chance that an adequate blood supply would have been maintained, or to have made an effort to suture the kidney into a position more favorable for drainage. Reimplantation of the ureter may or may not be successful. If it fails, nephrectomy will generally be necessary and this is undesirable. As a matter of fact the division of large aberrant vessels of the kidney can generally be done with safety and is to be preferred to the reimplantation of the ureter.

Malpositions of the kidney, other than ptosis, and generally but perhaps inaccurately, regarded as torsion are occasionally seen and these also may show little or nothing on physical examination, in spite of producing severe and obscure abdominal symptoms. I wish to mention briefly two cases falling under this head.

The first was a stout, middle-aged woman, of markedly neurotic temperament, who did, however, have undoubtedly severe left-sided pain. Frequent and thorough examination by both the medical and surgical departments revealed nothing to account for the symptoms. The urine showed only a rare white cell and simple x-ray was negative. Finally a left pyelogram was done giving the peculiar appearance shown in Figure 11. The condition was considered as

torsion of the kidney, perhaps for want of a better term. At operation the kidney was in fact found in a peculiar position, its lower pole being firmly adherent to the lateral abdominal wall, so that the long axis of the kidney was oblique instead of vertical. After freeing the kidney completely, it was decapsulated and sutured into a normal position. There has been entire relief of symptoms.

An almost identical case was seen shortly after this. The right pyelogram is shown in Figure 12. While it is certainly abnormal and peculiar in shape, it cannot be definitely classified except possibly under "torsion". The woman was very obese and middle-aged. She complained of a constant dull ache in the right lumbar region. The urine showed a few white cells. Simple x-rays were negative. Thorough examination by the surgical and medical staffs revealed no demonstrable cause for pain. At a previous visit to the Hospital she had been explored for gall bladder disease, but with negative results and no relief and in another hospital, at various times, she had had an operation on the uterus, on the left kidney for alleged calculi and on the right kidney for unknown cause. In view of the peculiarity of the right pyelogram it was thought that some abnormality in the position of the kidney might be found. This proved to be the case for on exposing the kidney I found it, as in the previous patient, in an oblique position, densely adherent to its capsule. The organ was freed completely from its bed of adhesions, decapsulated and sutured in a high and normal position. Since this operation the patient has been entirely relieved of her symptoms.

Finally, I wish to mention another cause of abdominal pain, easily mistaken for appendicitis or what not and due to "horseshoe" kidney, which, although it is found to occur but once in about every 1100 persons, may fall into the surgeon's hands at any time. The writer has seen and operated upon three such cases in the past twenty years and may have seen, but did not recognize, others, as diagnosis before operation is not often made. In such cases the two kidneys are joined at their lower poles by an isthmus of renal tissue running across the median line. The blood supply is always abnormal and profuse and the pelves and ureters of these kidneys pursue an unusual course. Such kidneys almost always become the seat of trouble sooner or later, this being due either to calculi, to infection, or to the abnormalities of their anatomy. The urine of these kidneys may be entirely normal and simple x-ray may give no clue to the situation, although occasionally the contour of the kidney shadow is sufficiently clear to lead one to suspect a horseshoe kidney. The symptoms are often misleading and as has been already indicated, may lead to an opera-

tion for appendicitis or almost any abdominal disease.

I have operated upon such a case within the past month. The patient was a young healthy man of 28, who had been operated upon only a few years ago for what was supposed to be a gangrenous appendix. The appendix itself showed but little pathology and no other cause for the symptoms was found. The patient continued to have intermittent attacks of severe abdominal pain, accompanied by nausea and vomiting, pyrexia and marked tenderness in the region of the umbilicus. These attacks would last from a few hours to several days. During his stay in the Hospital he was thoroughly examined by surgeons, internists and orthopedists, but without result. The urine was negative and simple x-ray at first showed nothing remarkable. On closer inspection, however, no evidence of a normal kidney shadow could be seen on either side, but in the region of the vertebral column, especially on the right, there could be seen a faint curving shadow (Figure 13), suggesting the possibility of congenitally fused kidneys. Bilateral pyelograms were made showing (Figure 13) malposition of the right kidney and ureter and the abnormal contour of the left kidney pelvis, apparently more or less rotated on its long axis. The preoperative diagnosis of horseshoe kidney was made on these data and also on the fact that the patient was always somewhat relieved of his pain by a bed rest or when standing, by keeping his body bent forward—in other words by decreasing the pressure of the lumbar spine on the fused kidneys. Laparotomy showed nothing in the abdomen to account for symptoms. Behind the peritoneum there was felt a definite fusion of the two kidneys across the median line. On exposing this isthmus of renal tissue by division and retraction of the posterior peritoneum, a broad, thick, but healthy looking mass of kidney tissue was found joining the two kidneys at their lower poles. The pelvis and ureter of the right kidney was found to emerge from behind and above the isthmus and to cross it anteriorly in the median line as indicated in the pyelogram. Evidently the symptoms of which the patient complained were due to interference with the drainage of the right kidney by the abnormally placed ureter. Division of the renal isthmus was obviously impossible and nothing further could be done. The patient has so far been free from pain but it is probable that he will have a recurrence of symptoms in the future.

There are also many other varieties of congenital abnormality of the kidney or ureter which may give rise to abdominal pain. One or both ureters may be bifurcated at any point from kidney to bladder or there may be two ureters on one or both sides, with separate orifices in the bladder. The kidney pelvis itself may be bifurcated, the two portions draining

into a common ureter. Any or all of these conditions may exist and give rise to severe but misleading abdominal pain, the urine may be persistently normal, simple x-ray will show nothing of diagnostic value and palpation will reveal nothing. Only by careful and very complete cystoscopic examination, which will include pyelograms and ureterograms will the actual situation be made clear.

It is obvious from a brief consideration of these cases that the abdominal symptoms originating in kidney or ureter may not only be severe and persistent, but may also resemble those having their origin in almost any abdominal organ. It is equally clear that even the most painstaking study, if it omits that which can be done by the urologist, may fail to reveal the diagnosis. While many of the renal or

ureteral lesions here described, at least in their more advanced stages, may eventually call attention to the urinary tract through the presence of an abnormal urine, it is frequently found that this clue is wanting. Much, therefore, is yet to be learned about the symptomatology of the kidney and ureter and this applies not only to the urologist but also to the internist and general surgeon. Only by close and frequent coöperation of all three and through the elimination of every possible source of symptoms can the number of unnecessary and futile operations be avoided. Experience now shows that what was until recently considered to be a complete urological examination may fail to reveal the diagnosis unless, in addition, ureterograms as well as pyelograms are made.

STETHOSCOPES

BY WILLIAM R. BARSS, WALTER F. EADE AND
EDMUND B. FITZGERALD, M.D.

RECORDED invention, relative to stethoscopes, dates back about seventy-five years, and is covered by seventy-two patents. Of the many types suggested, only three have attained any degree of popularity, two of these three being similar in design and construction, while the third is somewhat different in shape and makes use of a diaphragm.

Rene Theophile Hyacinth Laënnec (1781-1826), a native of Quimper, Brittany, by his invention of the stethoscope in 1816, produced a considerable advance in the art of diagnosis in diseases of the chest. Although this invention placed Laënnec among the greatest clinicians of all ages, the date is given as 1815 in one history (Roswell Park's) and in 1819 in another (Garrison's). The year 1816 as given here, is taken from an article that was written by the son of one of Laënnec's pupils and is probably accurate.

Although the story has been often told, it may still be permissible to consider the occasion for the invention of the stethoscope. Formerly, it had been necessary to depend on the following aids in the diagnosis of diseases of the thoracic viscera:

1. Percussion—invented by Auenbrugger and advanced by Laënnec.
2. Palpation—of which a great exponent was Dr. Matthew Baillie.
3. Non-mediate Auscultation—by putting the ear to the chest with linen intervening. To quote from a lecture by Dr. Charles Williams, "This is sometimes impossible with females, and it is not possible to auscult the supraclavicular or suprascapular regions in this way. There was, therefore, a great need of some means of diagnosis and Laënnec's discovery met it. The invention was made in this way: (to quote his

own account) 'In 1816, I was consulted by a young woman laboring under general symptoms of diseased heart and in whose case percussion and the application of the hand were of little avail on account of the great degree of fatness. The other method just mentioned was rendered inadmissible by the age and sex of the patient. I happened to recollect a simple and well-known fact in acoustics, and fancied at the same time that it might be turned to some use on the present occasion. The fact that I allude to is the augmented impression of sound when conveyed through certain solid bodies, as when we hear the scratch of a pin at one end of a beam of wood on applying our ear to the other end. Immediately on this suggestion, I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the heart and the other end to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear.'

Laënnec tried to make this paper into a solid body but he could not roll it tight enough. There was always the longitudinal aperture left in the paper thus rolled and this led him accidentally to discover that the aperture was necessary.

Dr. Williams also goes on to say that his father, who was a pupil of Laënnec, bequeathed him a stethoscope that had been given to him by Laënnec. It was a cylinder of boxwood 1.5 inches in diameter, and 13 inches long, perforated longitudinally by a bore 0.75 inch wide, and hollowed out into a funnel shape to the depth of 1.5 inches at one of its extremities. Laënnec thought he could hear the heart sounds

better by using a stopper or plug, and the breath sounds by removing the stopper and using the conical end as a collector of sound. He also tried using a solid rod as a stethoscope.

On account of the large size of the tragus of the ear, it was difficult for some physicians to use the original Laënnec instrument, so accordingly, an ear piece was hollowed out.

Later Piorry reduced the stem of the instrument to the thickness of a finger. The chest end was then modified to the shape of a trumpet. The modern monaural stethoscope in use on the continent is essentially the same as this last modification. The ear piece is sometimes mounted on a swivel joint to facilitate auscultation above the clavicle and scapula. The first binaural stethoscope was invented in 1829 by an Englishman, Dr. C. B. Williams, a pupil of Laënnec; although Dr. Leared claimed to have invented the double stethoscope in 1851 and Roswell Park's History of Medicine ascribes the idea to Camman of New York. The Williams stethoscope was a trumpet shaped chest piece of mahogany to which were attached two bent lead pipes (because india rubber was unknown at that time).

There have been many modifications of the stethoscope since, but apparently there has been no serious attempt made to design the shape of the sound receiving chamber in such a way as to produce the utmost sensitivity and the least interference among the sound waves themselves.

The use of electrical stethoscopes has interesting possibilities, but it is probable that the great bulk of the medical profession will still use the present day non-electric stethoscope for many years to come. The advantages of the multiple electric stethoscope in teaching have been clearly brought out by Dr. R. C. Cabot². The use of a microphonic stethoscope for demonstrating the fetal heart tones in the delivery room was explained by Drs. Falls and Rockwood³.

Concentration by students on particular heart and lung sounds has been facilitated by means of filters whereby sounds of frequencies higher or lower than a certain point have been excluded.

The electrical stethoscope was demonstrated to an audience of 500 at the annual session of the American Medical Association in 1925. However, it is not practical for a physician conducting a bedside practice to carry a three tube set and additional apparatus around with him.

In an article by Dr. J. C. Gamble⁴ he says: "A fascinating possibility of the electrical stethoscope is that of diagnosis not otherwise possible. In one series of thirty-four patients known to have had heart murmurs, three murmurs were detected electrically which had been missed in a careful examination made immediately before by the same observer with the usual form of stethoscope."

There is also a fascinating possibility, that if the ordinary stethoscope bell were redesigned, many sounds which have heretofore been indistinct may be increased to such an extent that diagnosis would be facilitated. Also some new sounds of diagnostic value may be noted. It is true that many continental physicians say that they hear too much with the present binaural stethoscope and that a more delicate instrument would only confuse them. But to many physicians the possibility of getting more

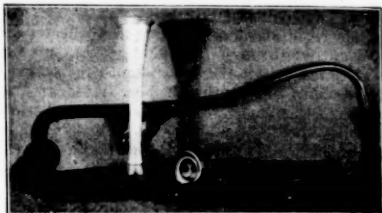


FIG. 1.

distinct heart and lung sounds, would be greeted as an important aid in the art of diagnosis. This is of particular importance in listening to the fetal heart or in detecting fine apical râles.

A trained listener at a symphony concert can distinguish the various instruments in a large volume of sound. A trained physician should be able to accomplish the same thing in auscultation.

Some of the types of stethoscopes referred to in the above discussion, are shown in Fig. 1. The one on the right is the

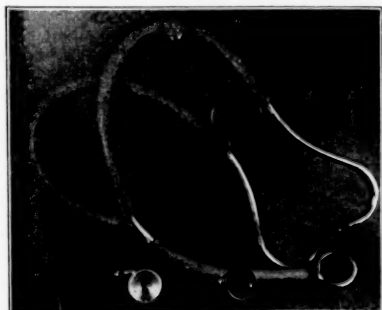


FIG. 2.

binaural type, the one in the center upright is the monaural type. Both of these are in common use in Continental Europe at the present time. The one on the left is the binaural type which has been ascribed to Camman. It is practically obsolete.

The three types mentioned in the opening

paragraph, and which are in use in this country are illustrated in Fig. 2. These are all binaural. The one on the left is known as the Ford type, the one in the center, is ascribed to Snifton, and the one on the right is the Bowles type. The latter makes use of a diaphragm.

The common types which do not employ a diaphragm consist of a bell or collector, to which is attached by means of a Y connection two rubber tubes each fitted with a hard rubber ear piece, and a spring band causing the ear pieces to fit snugly. By means of the collector, sounds from an outside source are collected and transmitted through the tubes to the ears.

The majority of the patents relating to stethoscopes deal with the mechanical arrangements of the separate parts and have little to do with the design of the collector. The apparent lack of information, with reference to the shape of the collector, suggested to the author that much information of a constructed nature might be had through systematic research.

The fundamental idea has been to increase the intensity of sounds received by the ear. Since the intensity of the initial sounds cannot be increased, this purpose must be accomplished by increasing the efficiency of transmission from source to ear. If this can be done, sounds audible with the present devices will become more audible, while some which have been inaudible heretofore will become distinct.

The effect on the ear is determined by the variation in pressure of the enclosed volume of air. This pressure variation is inversely proportional to the volume so that, theoretically, an infinitely small volume would experience a maximum pressure variation. This variation in pressure is also proportional to the amplitude of the motion of the source (skin and flesh). This amplitude is reduced by the push of the

sound from the largest area of exposed surface (skin and flesh). This would seem to warrant a large mouth area. There is a limit to this area however, as beyond a certain value, phase differences will occur which will influence the intensity and consequently the sensitivity.

To sum up, the main ideas back of this investigation are that a small volume and a large area, consistent with the above discussion, will result in a maximum sensitivity.

EXPERIMENTAL DETAILS

Two sets of collector models were made. The first set, which will be numbered 1, 2, 3, 4, 5, was made with constant mouth area and varying volumes. The shape of the air chamber was not varied in any systematic way, the models being replicas and modifications of several types which are used in practice. They are illustrated in the top row of Fig. 3, and a de-

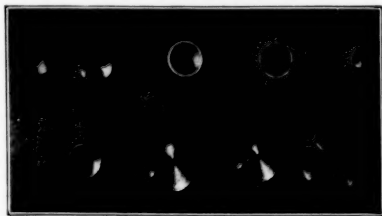


FIG. 3.

tailed drawing is given in Fig. 4. The second set which will be designated by A, B, C, D, were cylindrical in shape, were of constant volume, and mouth area varying inversely with depth. These are illustrated in the lower row in Fig. 3 and a detailed drawing is given in Fig. 5.

The receiving and testing apparatus was of

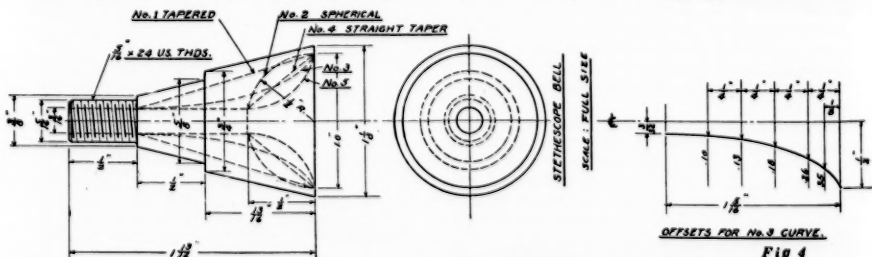


FIG. 4

stethoscope rim against the flesh, and also somewhat reduced by the opposing pressure variation of the enclosed air. Therefore, it is evident that a certain minimum of air volume (not zero) will give the maximum sensitivity.

Again, one of the fundamental ideas of the collector as its name signifies, is to gather

the diaphragm type and is a modification of the Phonodeik as perfected by Miller⁸. A diagram of the apparatus is given in Fig. 6.

R is a parabolic reflector with a source of sound S at the focus of the reflector. The source of sound employed was an organ pipe 256 vibrations per second blown with an air

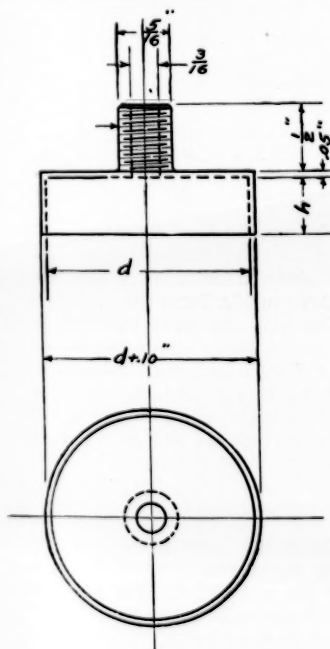
blast at constant pressure of 2 inches of mercury. A plane parallel beam of sound is reflected from the mirror, part of which is collected by the horn H, which in this case was one of the models under test. D is a diaphragm of thin corrugated steel to which is attached a fine thread T. This thread passes around a small pulley P, the other end of the thread be-

By placing the different models in position H, their relative effects in collecting and transmitting sound can be calculated by measuring the deflection of the beam of light. Care was taken to keep the distance from the source of sound to the diaphragm constant, also to keep the optical distance from the source of light to the screen constant, as changes in either of

STETHESCOPE BELL

SCALE - FULL SIZE

$\frac{5}{16} \times 24 \text{ U.S. THDS.}$



DIMENSIONS

TYPE	d	h	VOLUME
A	2.0	.245	.77
B	1.75	.320	.77
C	1.50	.436	.77
D	1.00	.980	.77

Fig 5

ing fastened to a tension spring C. The pulley P is really a groove cut in a slender spindle A, the spindle being mounted in bearings BB. M is a small plane mirror fastened to the spindle. Light from a source L is reflected from M to a screen F. Sound impinging on the diaphragm causes it to vibrate in the direction of the sound wave. This linear motion causes the spindle to rotate thus producing a deflection on the screen of the reflected beam of light.

these distances will affect the deflection values.

The receiving apparatus as a whole was placed in a sound proof booth, to minimize the effect of sounds other than from the source S.

In order to obtain information relative to the use of a diaphragm in conjunction with the bell type, a sheet of rubber was cemented to the rim of models A, B, C, D, and these were again tested under the same conditions as before. By this means an approach was made to the actual

conditions under which a stethoscope is used.

The results of the tests are given in Table 1. The figures under Vol. represent the volume of the chamber of the bell in cubic inches. The figures under area, represent the area of the large end of the bell in square inches. The figures under column P represent relative in-

permissible to call attention here to a comparison of the results given for two models, No. 2 and No. 5, for it shows a very interesting point as regard the flow of air. One of these, No. 2, is of standard design, whereas, the intake of bell of No. 5 is inversely curved to that of No. 2, and that the intensity factor for No. 5 is 38% higher than that of No. 2. This is as it should be, for the resistance to smooth flow is much less for No. 5 than for No. 2, also from the curve in Figure 7, as the volume is decreased (which occurred in this case) the intensity increases.

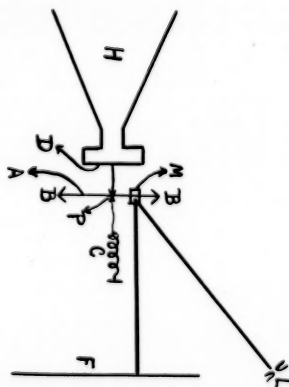
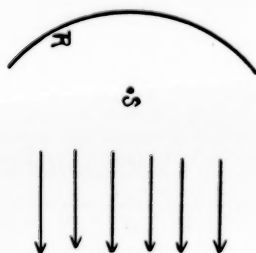


Fig 6.

tensities without the rubber diaphragm while those under column Pr represent relative intensities with the rubber diaphragm mentioned above. The figures under the last column "R" represent an intensity factor based upon No. 2, the Ford type as a standard. These factors are obtained by dividing the relative intensity of any bell, by that of that of bell No. 2. It seems

TABLE 1

Bell No.	Vol.	Area	P	Pr	R
1	0.421	0.785	12.8		0.9
2	0.264	0.785	14.1		1.00
3	0.180	0.785	15.4		1.09
4	0.157	0.785	17.5		1.24
5	0.077	0.785	19.4		1.38
A	0.770	3.14	24.0	14.9	1.70
B	0.770	2.40	19.5	9.90	1.38
C	0.770	1.77	16.0	6.70	1.14
D	0.770	0.785	12.5	3.40	0.89

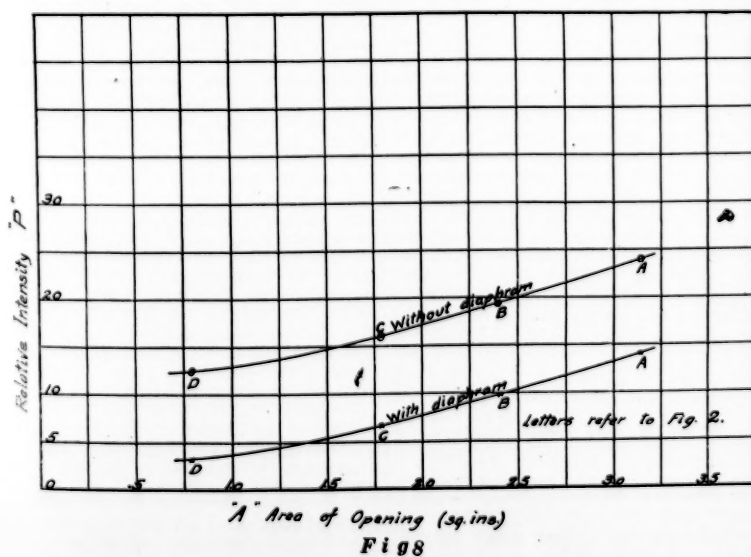
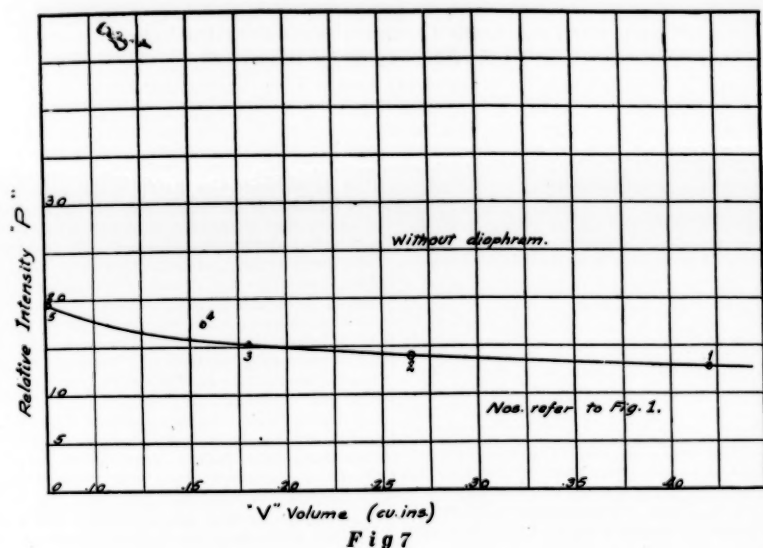
The data given under Table 1 have been plotted as shown in Fig. 7 and Fig. 8. In Fig. 7, the ordinates of the curve represent the relative intensities, the abscissae the volumes of bells No. 1 to No. 5 inclusive. In Fig. 8, the ordinates of the curves represent relative intensities, and the abscissae mouth areas of bells A to D inclusive, with and without the rubber diaphragm.

CONCLUSIONS

The results of this investigation show conclusively that the original premises are justified; namely that a small air volume and large mouth area are conducive to greatest intensity. As has been pointed out before, there are practical limits which must be placed upon the volume and area, so that the exact dimensions for maximum intensity are yet to be determined. The work already done is but a starting point in what, we hope, will be a decided advance in the theory and construction of this type of stethoscope.

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The Massachusetts Medical Society

THE CONTROL OF COMMUNICABLE DISEASES PREVALENT IN MASSACHUSETTS*

With a Study of the Mortality Due to Them During the Past
Seventy-Five Years

BY EDWARD G. HUBER, M.D.

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II. HISTORY OF QUARANTINE

The derivation of the term "quarantine" is evident, but the reason for deciding on the number forty as being the correct number of days in the period of detention, from which the entire procedure derives its name, is as obscure as is the history of the early practices of that institution. The number forty has considerable prominence in the Bible, for instance: the forty days of the flood; the forty years' duration of the crossing of the wilderness by the Children of Israel; the forty days which, according to the Law of Moses, were necessary for certain purification processes; and the forty days' fast of Christ. The last-named event developed into Lent, the purpose of Christ's fast and of Lent each being the purification of the soul. Since early quarantine measures were founded on principles of prejudice and superstition rather than on scientific facts, experience, and reason, it was but natural to assume that if a fast of forty days purified the soul, a similar purification from some intangible contagion might follow a detention which endured during so potent a number of days as forty. The religious aspect of the origin of quarantine may be viewed from still another angle. It was during the fifteenth century that quarantine developed, although, as will be seen, there were scattered instances of its observance before that time. Probably that century was the darkest period of mediaeval history, particularly in Italy. There was then no real scientific knowledge. All that passed for knowledge was simply handed down from one generation to the next with no attempt on the part of any but a very few, to learn for themselves. Roger Bacon had lifted his voice but he was centuries ahead of his time. The causes of disease were wholly unknown, to none more so than to the physicians. According to the latter, there were three causes of disease:

1. The influence of the stars and the planets.
2. The influence of demons.
3. Visitation by Heaven, for punishments.

The third cause may at first glance seem inconsistent, until it is analyzed. Practically

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all of the pestilences came from the East. This part of the world was viewed with fanatical reverence by Europeans because Jesus Christ had hallowed the ground. At the same time the presence there of infidels practicing a religion obnoxious to Christians caused deep feelings of resentment. That pestilences arose in the East, seemed to European Christians to be a just retribution visited on the infidels for defiling the sacred places. If these pestilences were transmitted to Christian countries by some sort of contagion, it seemed perfectly logical that a benevolent Deity who had desired to punish infidels only, might be induced to stay the spread of a plague if purification for so efficacious a number of days as forty could be practiced.

Quarantine as first applied meant the detention, for forty days, of ships—including their crews, passengers, and cargoes—and a fumigation of almost everything on board except metals, wine, oil, drugs, and aromatics. Fumigation was accomplished by means of pleasant odors, since the disagreeable ones were thought to make atmospheric conditions more favorable for the development of plagues. Volatilized, pungent, aromatic substances, dew which fell in the dead of night, and lime applied as whitewash, were regarded with much favor. In spite of the fact that the meaning of quarantine is now very different from its first one, the term itself is still in use.

Quarantine as practiced during the Dark Ages, entirely a product of ignorance, retained its hereditary separation from science, and did not develop along rational lines until the middle of the nineteenth century. There were frequent changes and modifications in method, as the years wore on, but they were blind gropings after something more successful than past methods had been. Apparently there was no suspicion that filth was a factor in any way in the transmission of disease. The intangible "contagion" was supposed somehow to adhere to a ship. As a result of enforcing these measures so blindly there was great interference with commerce, unnecessary sacrifice of property, and other equally needless and almost inhuman practices. Quarantine often necessitated the burning of entire ships and their cargoes. The forty day detentions generally meant the delay of ships over a period of sixty to sixty-five days. The quarantine dues were

often a third to a half the value of the cargo. For the passengers the period of detention was not only useless but even dangerous, for they remained exposed to dangers which they might otherwise have escaped. Most of these senseless practices have been gradually discontinued but certain ones which under the influence of tradition are still included in the rather hazy term quarantine are still with us.

It is now easy, of course, to understand why the old quarantines were not successful. And it is also apparent that what modicum of success attended the quarantine measures and encouraged the people to try again was due primarily to the greater cleanliness and the change in mode of life which characterized the emergence from the Dark Ages. During that dismal period all were ignorant as to how pestilences spread and therefore, in general, the mob was content to follow the leadership of those in control. But ever since people began to think for themselves and not to depend on superstition and tradition, there has been considerable diversity in opinion not only as to the correct methods of quarantine but also as to the results obtained. This condition is still true to some extent.

Roughly speaking, we may divide the old quarantine methods into three periods. The first, up to the end of the fourteenth century, was the period of leprosy, when individual isolation was the rule. This was not quarantine in the sense in which the term was used in the next period but it is included in our present definition of the term. The second period extended from the beginning of the fifteenth century to the end of the seventeenth, and the chief efforts were against "pest" and syphilis. The third period covers the first half of the nineteenth century, when cholera and yellow fever received the most attention. Since the close of the last period, a new era has dawned, for modern scientific methods have been followed.

FIRST PERIOD

There is some insufficient evidence that in the days of ancient Rome and Greece a few attempts were made to check the spread of diseases which were then considered contagious, but the proof brought forward is not incontrovertible, and it is therefore generally accepted that the first quarantine described in any literature was that decreed by Moses in Leviticus XIII, XIV, and XV, Numbers, and Samuel I. He made regulations concerning leprosy, ordering the isolation of infected individuals and the holding of suspected ones for observation and cleansing. He also recognized venereal diseases as contagious—Leviticus XV—and made regulations concerning them. Lepers were isolated whenever the diagnosis was made by the priests, to whom all persons with skin diseases were ordered to report for

examination. The priests had a minutely described standard by which they made diagnoses and ordered isolation if the diagnosis was positive. It is rather curious that Moses did not recognize as infectious such diseases as the epidemic of pest described in Kings II. Other pestilences are also mentioned in the Scriptures but no such attention is paid to them as to leprosy. By the term pest is meant a group of diseases, including plague, which appeared in epidemic form at one time or another, and the individual epidemics of which we are unable to identify etiologically.

The first period in the history of quarantine, as mentioned above, was essentially one of land quarantine, characterized by isolation of cases. There are snatches of data from here and there during this period indicating that the practice was wide-spread. Eager quotes Captain Cook to the effect that he found that some of the natives of the South Sea Islands, who were to all intent and purposes still in the Stone Age, had crude sanitary precautions against arrivals from neighboring places. In his description of his first voyage to Otaheite (Tahiti) Captain Cook speaks of "cutaneous eruptions of a scaly kind very nearly approaching to a leprosy." Victims of this disease, in the advanced stage, lived in seclusion in small houses in unfrequented places, where they were supplied with provisions. There were also, in various places in Europe, as early as the seventh century, legal regulations against the marrying of lepers. Leper houses existed at this time (before the Crusades) in Metz, Verdun, and Maestricht. The early Greek and Roman writers described leprosy and its spread from Rome to the conquered regions and even further. One or two hundred years later, in the eighth and ninth centuries, leper houses in Europe increased in number. Whether this was due to an increase in the number of lepers or not, is disputed. Most of the leper houses were built during the period from the eleventh to the thirteenth centuries when there was a striking increase in the number of lepers in Europe following the introduction of the disease by the returning Crusaders. There probably were many wrong diagnoses due to confusion with other chronic skin diseases but it is unlikely that many cases of syphilis were diagnosed as leprosy until after the new cases of the latter ceased to arrive from the Orient. These leper houses came to be called lazarettos, a name brought to Europe from Palestine by members of the Order of St. Lazarus which was founded at the time of the Latin Kingdom of Jerusalem (1099-1187) to help lepers, many of whom belonged to the Order. When the Saracens drove the Crusaders back to Europe, the Order became established there, especially in Naples and France. It became powerful and was authorized (in Naples) to seize and confine anyone suspected of leprosy or of other

infectious disease. Such power is always abused sooner or later, and as a result, a black-mailing inquisition was established. In other cities as well, any diseases thought to be contagious were confined in the lazarettos. In addition, insane persons, political prisoners, and people objectionable for one reason or another were kept in seclusion in the same lazarettos with the lepers. At one time, it is said there were 19,000 lazarettos in Europe. There were 109 at one time in England and Ireland, the first of which was established in 1096, and the last in 1472.

Eager says the Crusaders found lazarettos outside the gates of Jerusalem and that these buildings were then used by them for the isolation of cases of leprosy. The victims of that disease were not always strictly confined to the lazarettos. It was their privilege to walk on certain roads if distinctively dressed and if warning others of their approach by a characteristic bell. They were not allowed to speak with uninfected persons.

SECOND PERIOD

As leprosy diminished in Europe, that indeterminate group of diseases which we call "pest" began to increase. Some of the diseases in this category had appeared occasionally during the leprosy period but preventive measures against them were not attempted for a long time. The idea that the disease was autochthonic whenever large numbers of people were crowded together under bad living conditions prevailed, and kept people from isolating the early cases. The influence of this belief persisted until as late as the Napoleonic Wars. However, when victims of the pest finally began to be isolated, it was the influence of the methods that had been used in leprosy that held sway. Where in leprosy there had been final complete isolation of cases, there was substituted, in pest, a temporary isolation from the rest of the world not only of the sick, but of suspects and fomites. The laity took up these notions before the physicians were ready to accept them, so the measures were unduly harsh and wholly governed by superstition.

We do not know when quarantine actually began, any more than we know the origin of plagues, pest, and contagion. Eager says that in the works on jurisprudence of the Emperors of the East it is stated that care should be exercised in having relations with persons arriving from places where pest reigns. It was ordered, in consequence, that those so exposed should be separated from others for the purpose of observation. The term of forty days for this purpose was proposed, it is stated, this length of time being the supposed maximum period of the duration of acute maladies.

Eager also states that merchants noted that

cloistered monks escaped epidemics, so many merchants shut themselves up in their residences and transacted business from balconies or terraces on their houses, or from barred windows. The return of the Crusaders also introduced "Egyptian Plague" into Europe, to a less extent however, than leprosy. It was noticed by the observing that those who avoided the sick were the ones most likely to escape the disease. Therefore the defense measures which were introduced went one step further than in the case of leprosy, namely, cutting off intercourse with places where plague prevailed.

During the Middle Ages, Europe was ravaged with a series of severe epidemics such as the world has never seen before or since with the possible exception of the recent typhus epidemics. According to Garrison the causes were:

1. Crowded condition and bad sanitation of walled cities.
2. Squalor, misrule, and immorality occasioned by the many wars.
3. Europe overrun with vagabonds.
4. General superstition, ignorance and uncleanness of the masses.

Eight diseases were regarded as contagious, and Sudhoff thinks they were the following, bubonic plague, phthisis, epilepsy, scabies, erysipelas, anthrax, trachoma, and leprosy.

The characteristic quarantine of the second period was maritime, just as isolation of individual cases had been the keynote of the preceding one. During the early part of the second period, Venice was the leading city of the world. Her commerce was most extensive and her citizens were of the enterprising sort, so that it was to be expected that she would take the lead in attempting to protect herself from pestilences. Eager says that as far back as the year 1000 there were overseers of public health in Venice, who served during epidemics only. As they were not permanent officers very little is known as to what measures were taken by them. In 1348 there is, however, definite evidence that the household goods of those that died of plagues were destroyed and that there were health officers, or protectors of the health. Occasional precautions are said to have been taken at this time at Florence also. But the very first documentary evidence to be found is contained in the chronicles of Reggio, Italy. This historical document was written in 1374 by two laymen and was an order of the Viscount Barnabo to the effect that all persons sick with the pest were to be taken outside the city into the open country, camp, or woods, there to remain until dead or cured. It was the duty of the priests to report all the cases of pest of which they knew; failure to observe this order involved death by fire. As a result of such harsh treatment, the people suffered more from the isolation than from the disease. In 1377 Ragusa,

Italy, practiced detention for a thirty day period (trentina). A few years later, in 1383, Marseilles first required quarantine for the forty day period, but not to any important extent. The date generally accepted as being the one which saw the inauguration of serious quarantine is 1403; the place, Venice. Certain definite restrictions were placed on all vessels arriving at the port from the East, to prevent the introduction of "black plague" and of "Egyptian plague," and a maritime quarantine station was established on one of the neighboring islands. The sale of the effects of those that died was prohibited; destruction was ordered instead. Three protectors of the health were provided for and appointed, and a lazaretto was established. The smaller cities on the Adriatic followed this example, and in 1467 Genoa did likewise, with Milan not far behind. Genoa established a lazaret for plague in 1467. Marseilles early adopted the example of the Italian cities and an efficient system of sanitary supervision was developed which finally passed under the control of sanitary magistrates. The leprosy hospital at Marseilles was, in 1476, converted to one for plague. In 1459 a public bureau of sanitation was definitely and permanently established in the Republic of Venice and the conservators of sanitation were regularly appointed. Their duties included more than maritime quarantine alone. In 1504 the powers of this board were extended to include life and death.

During the fifteenth century maritime quarantine became quite universally established in all ports which dealt with the East to any great extent. During the next century, while the various systems in use were being amplified and extended, the complicating problem of syphilis entered the field. The question as to whether this disease was imported from the New World, or whether it had existed in Europe before the discovery of America has not been settled. The pandemic outbreak of syphilis at the end of the fifteenth century might well have been the result of the introduction of the disease from America as far as the correlation between the dates of the two events is concerned. But we know it is perfectly possible for a disease comparatively unknown, or sporadic, to become pandemic with no possible explanation of the phenomenon. As the constitutional character of syphilis was not recognized until the pandemic, it is perfectly possible that it had existed before in Europe. It is also known that a disease may exist in mild form for years, and then suddenly develop an unprecedented virulence. It is also conceivable that a new strain of treponema might have been introduced from the New World which resulted in a heightened virulence in Europe. But however the disease was introduced, it was necessary to deal with it.

The earliest known regulations against vene-

real diseases other than those of Moses recorded in Leviticus XV were promulgated in London in 1161. An Act in that year forbade brothel keepers to have women suffering from "the perilous infirmity of burning." In 1430 they were forbidden to admit men suffering from "infirmity nefanda." In 1496 the Senate at Paris decreed that all persons affected with syphilis were forbidden to have any dealings with well persons. The sick were to be segregated. This law was disregarded, so it was then ordered that all persons so infected found in the city should be cast into the river.

Up to this time all the various steps in the evolution of quarantine had been forced by public opinion, the medical profession not having subscribed to the doctrine of contagion. But, late in the fourteenth century, two medical men, Jacobo della Torre and his disciple, Michele Savonarola, first gave expression to the idea that pest is infectious by contact. Della Torre advised the civil authorities to remove outside the city and to isolate all cases of pest as well as all persons who had been with the sick. Delay in following this procedure was deprecated, for all precautions would be futile, he said, if the disease spread throughout the city. Savonarola went a step further and declared that persons in good health might transport the virus to distant places and that those who do not come in contact with those sick with the plague or with persons or things carrying the infection, are not afflicted. The views of these men were not accepted until in the sixteenth century Fracastoro took them up, amplified them, and made them public in so attractive a manner that they were accepted. In 1545, at about this time, the Council of Trent was to meet. On the advice of Fracastoro, Pope Paul III issued a proclamation to the effect that a fever of pestilential origin which was prevailing in Trent was contagious. This caused the Council to be convened in Bologna instead of in Trent. Whether the Pope would have been so willing to support Fracastoro had it not been to his political advantage to have the Council meet in Bologna is doubtful. At any rate the Act did a great deal to establish the belief in contagion, which belief was reflected in the establishment of more lazarettos and in the increased number of cities which established quarantine systems. The nature of the pestilence in Trent is unknown, but it may well have been syphilis.

During the latter part of the period when pest and syphilis held sway, quarantine measures began to be taken in the inland as well as the seaport towns. This process was gradual, probably coincidental with the extension of epidemics from coast to interior. As early as 1482 we learn that there was a special plague hospital in Geneva. In 1490 and 1493 ordinances were passed in that city prohibiting meetings, dances, and in fact all public gath-

erings large and small, during epidemics. The regulations for inland quarantine in the various towns differed more from one another than did the methods of maritime quarantine in the seaports. In addition the penalties were more severe in the inland towns. In Geneva in 1530 and 1545 a number of people were tortured and burned under pretext of having propagated contagion (*par des hardes ou des chiffons*). Again in 1568 several were burned whom public opinion accused of being "boute pestes." During the sixteenth century plagues visited the inland cities in an unprecedented manner. The preventive measures taken varied greatly, but in general, boards of health were authorized to put to death violators of the law, to obtain necessary funds by taxation, to isolate suspects as well as the sick, and to establish lazarets. The diseases which prevailed most as epidemics during this century were probably bubonic plague and typhus. The visitations of these diseases in Central Europe were frequent, but apparently they were kept localized by the general effect of the following measures which were fairly uniformly used:

1. Quarantine of houses which sheltered patients.
2. Strangers from infected cities forbidden to enter, under pain of death.
3. Pomiets, especially clothes and beds, burned.
4. Fumigations in streets and public squares.

These sequestration methods were enforced by sanitary police, who often carried to extremes the isolation methods. Fumigations were ridiculously carried out, and had the same value then as now—indirect only.

The eighteenth century was characterized by the maximum use of lazarettos, the name of these institutions not having been altered when, instead of lepers, the patients were victims of pest. The pestilences seemed to be leaving the inland towns and once more to be confining themselves to the seaports. During the latter part of this century John Howard published a very important work describing his investigations of prisons and lazarettos. This work had two far-reaching results. In the first place, by attacking the overcrowding and the defective appointments of the prisons and lazarettos, and showing that gaol fever accompanied such conditions, he did a great deal to suppress typhus. In the second place he demonstrated the futility of quarantine on merchandise, and really laid the foundations for modern methods.

England did not establish a quarantine until 1710, over a decade after plague had disappeared from the country. There were epidemics in some of the Baltic ports at the time and it was feared the disease or diseases might extend to England. In 1721 the great Marseilles epidemic caused Parliament to pass another quarantine act. In 1733 this Act was renewed, there being plague on the Continent.

In 1743 and 1752 renewals of the Act were occasioned by plagues at Messina and the Levant, respectively. In 1752-1772 quarantine orders were chaotic, and the restrictions on commerce were most severe; in 1788 the most oppressive quarantine act in England's history was passed. With the coming of the nineteenth century there was amelioration in the severity of the laws. In 1805 there was another new act which was the last during this general period.

THIRD PERIOD

During the first half of the nineteenth century yellow fever and cholera were the diseases most feared and most guarded against. In America, measures against yellow fever were taken over a century before they were in Europe, for obvious reasons. Conversely there were no visitations of the plagues of the Old World in America and we find that yellow fever was the only disease actively quarantined against in the New World (except small pox to some extent). The measures put in force against yellow fever and cholera were the same as had been developed and used in the Old World against leprosy and plague. Until yellow fever was understood, the quarantine methods in America were directed against that disease more than against any other. The very first quarantine in the Western Hemisphere, in all probability, was directed against yellow fever very early in the history of that disease. The first epidemic of yellow fever known was the one in Barbados in 1647. There is no clue as to the origin of that epidemic except that the historian of the Colony thought it was brought in on ships. In the same year there was issued by the Court, in Massachusetts, a quarantine order which was probably the first such regulation in the New World. The wording is of considerable interest:

For as much as this Court is credibly informed yt ye plaque, or like greivous infectious disease, hath lately exceedingly rag'd in ye Barbadoes, Christophers, and other islands in ye West Indies, to ye grear depopulatg of those, it is therefore ordered, yt all our own or othr vessels come from any pts of ye West Indies to Boston harbor shall stop and come to an anchor before they come at ye Castle, undr ye poenalty of 100 pounds, and that no pson coming in any vessel from the West Indies shall go a shore in any towne, village, or farme, or come within foure rods of any othr pson, but such as belongs to the vessels companyyt hee or shee came in, or any wayes land or convey any goods brought in any such vessels to any towne, village, or farme aforesaid, or any othr place within this jurisdiction, except it be upon some island where no inhabitant resides, without licence from ye councill, or some three of them, undr ye aforesaid poenalty of a hundred pound for evry offence.

This order was effective for two years until the epidemic in the West Indies was over, when the court repealed it. There is said to have been issued during the same year—1647—in New Netherland an Order in Council similar to the

one in Massachusetts, establishing a quarantine against the fever in Barbados. In spite of these precautions yellow fever was epidemic in Massachusetts and New Netherland in 1647. During the great plague in London in 1665 another court quarantine order was issued in Massachusetts. In this order a hint pointing to the religious origin of quarantines may be seen. In this case the purpose of the quarantine was "that so we may be found in all due ways subservient to Providence for the preventing infection by the pestilence." To supplement this order a day of humiliation and prayer was next decreed.

Maritime quarantine was not the only quarantine in Massachusetts in the early days. In 1678 the Selectmen of Salem quarantined in his home for three weeks, an individual sick with small pox.

In 1699 there was a great epidemic of yellow fever in Philadelphia, and the General Assembly of Pennsylvania passed a quarantine law which was the first to appear on the statute books of any of the Colonies. This Act was entitled "An act to prevent sickly vessels coming into this government." A similar act was passed at the same time by the Colony of Massachusetts but was disallowed in Privy Council for the reason that "the terms Contagious, Epidemical, and prevailing Sickness" were ambiguous and "liable to great abuses," and also because the penalties were too high. Permanent quarantine legislation was however passed in Massachusetts in 1701; it dealt with both land and maritime quarantine. The other colonies soon adopted similar legislation; Virginia, 1722; Delaware, 1726; North Carolina, 1755; New York, 1758; and Maryland, in 1766. On Feb. 23, 1799, the first general quarantine act was passed by Congress, to be supplementary to the state laws. But it was not until Feb. 15, 1893, that the first National Quarantine Act was passed.

Quarantine against yellow fever was not ordered in Europe until the third decade of the nineteenth century, although the disease had appeared there in 1723—Lisbon—and a terrible epidemic had afflicted Spain in 1821. France, prompted by the Spanish epidemic passed a law in 1822 prescribing a uniform sanitary code for the nation. In England, the Act of 1823 and 1824 directing quarantine against yellow fever in the same way as against plague, but at the discretion of the Privy Council, was also a direct result of the epidemic in Spain.

About this time cholera began to demonstrate its right to be taken into consideration by those interested in quarantine. This disease advanced by land rather than by sea, as a rule; consequently the measures which had been tried late in the eighteenth century when Austria had stretched an unsuccessful military cordon across her eastern frontier to keep out plague were

once more tried, nothing better being known. By 1830 the total failure of such cordons was evident to all and the trend of opinion was to abolish all quarantines. But instead of taking that radical step, conservative measures were adopted, the aim of which was to attempt to stay an epidemic by reasonable restrictions, at the same time doing less damage to commerce thereby than would have been done by an epidemic of moderate severity.

In February, 1821, the legislature of Louisiana passed an act establishing a board of health with plenary power and a system of quarantine with provisions for vigorous enforcement. Following this Act, there was no epidemic of yellow fever in 1821 in Louisiana. Public rejoicing followed, and a proclamation of the Governor in January, 1822, voiced the sentiments of the people over the discovery of so efficacious a system. However, in 1822 a great epidemic occurred, followed the next year by another. The legislature then wholly abolished all quarantine and no further laws on that subject appeared on the statute books for some years.

MODERN ERA

The old regime of quarantine ended when the international sanitary conferences at Paris in 1851 and 1852 brought the beginnings of rational sanitary measures. Quarantine procedures were of course not established on a scientific basis until after Pasteur's work, but the year 1831, in England, saw the last application of the old measures, against cholera. In 1896, in that country, the Public Health Act repealed the last vestige of the quarantine act of 1825.

In America, a quarantine convention took place in Philadelphia in 1857, in order to exert some influence toward obtaining uniformity in the various antiquated state laws, and toward removing the useless overbearing features of those laws, whose disadvantages outweighed their advantages. Several annual meetings of the convention followed, but reforms were difficult to obtain and efforts soon ceased.

Maritime quarantine has now reached a high state of perfection but inland quarantine although becoming more and more rational as scientific discoveries appear is still in the state where there is a lamentable lack of uniformity between the procedures in vogue in the various cities and states. Evidence is not lacking that some of the principles governing quarantine in the Dark Ages have not yet been relegated to oblivion, as far as practice is concerned.

(To be continued)

MEDICAL PROGRESS

PROGRESS IN PEDIATRICS

BY JOHN LOVETT MORSE, M.D.

INFANT FEEDING

Breast Feeding

AMERICAN pediatric literature continues to contain many articles on breast feeding. Most of them, however, resemble closely articles which were written one hundred or more years ago and contain little that is new. It is doubtful whether the present method of expressing breast milk is any different from that in use generations ago, although it is better described. It is certain, however, that our forefathers did not use electrical breast pumps, which are proving most useful and are available to all at a moderate rental.

Richardson (*Journal American Medical Association*, 1925, 85, 668) has called attention to the necessity of cooperation between physicians, lay organizations and public health societies when an attempt is made to popularize breast feeding. He went further into the necessary details to be carried out in the paper read at the last meeting of the American Medical Association in Dallas, which has not been published. Emerson (*American Journal Diseases of Children*, 1925, 30, 769) has called attention to the value of dried human milk as a food for infants and Emerson and Smith (*American Journal Diseases of Children*, 1926, 31, 1) state that their results show that not only full term but premature infants can thrive for considerable periods of time on dried breast milk. They believe that it is particularly indicated for premature infants and for those with severe intestinal intoxications. They emphasize the point that dried breast milk is the best logical substitute for fresh breast milk and call attention to the fact that it can be used when it is impossible, for some reason, to obtain fresh milk. They found that dried breast milk could be kept as long as five years without serious alteration. In fact, a considerable proportion of the milk which they used was from eight to ten months old. Babies took this as well and gained as much on it as on milk dried the day before it was used. They believe that, by improvements in the method of drying, a still better product can be obtained.

Artificial Infant Feeding

At the suggestion of Stimson, a group of seniors in the Cornell University Medical College prepared a number of papers on various methods of infant feeding, in order to collect the available information in a convenient form. These papers contain nothing new, but present various phases of the subject in a condensed form and give a very good summary of the literature.

Weeks (*Archives of Pediatrics*, 1925, 42, 722) gives a very good survey of the various forms of acid milk used in infant feeding and the various methods of their preparation. She explains the relation of hydrogen-ion concentration to gastric digestion and the value of acid in neutralizing the buffer substances in cow's milk, giving all that it is necessary for the practitioner to know.

Weber (*Archives of Pediatrics*, 1925, 42, 735) takes up the various forms of dried milk used in infant feeding, explains their preparation and discusses the changes produced by drying. She considers Horlick's Malted Milk, powdered S.M.A., Mammala and Lactogen, as well as the simple dried milks like Dryco and Klim.

Blenkle (*Archives of Pediatrics*, 1925, 42, 743) takes up the use of protein milks in infant feeding. He describes the various kinds, how they are made and their composition. He gives the composition and method of preparation of most of the casein powders and describes their preparation and composition. It is very hard to get this information elsewhere.

Eckhardt (*Archives of Pediatrics*, 1925, 42, 761) discusses the thick cereal formulas and butter-flour mixtures used in infant feeding.

These articles are very useful in that in them is collected a large amount of material which it is almost impossible to find elsewhere except after an extended search.

Supplee and Dow (*American Journal Diseases of Children*, 1926, 31, 41) have studied the variations in the antiscorbutic properties of dried milk. Their results are in substantial agreement with those of other investigators who have found a deficiency of the antiscorbutic vitamin in desiccated milk made by certain spray processes. Their experiments show that dry milk made by the Just roller process and stored in an atmosphere of air at room temperature for two years, has an antiscorbutic potency substantially equivalent to that reported for fresh milk produced at the same time of the year. They conclude that neither the differences in the scorbutic basal ration nor the period of storage serves as an adequate explanation for the low antiscorbutic values reported for certain milk powders.

Faber (*American Journal Diseases of Children*, 1926, 31, 395) in an article on Progress in Pediatrics devoted to acidified milks, has reviewed and abstracted the literature on this subject, paying special attention to the indications for and the limitations to the use of acidified milks. Being itself a review, it is difficult to abstract it further. It is, however, the first article in which an attempt has been made to really consider what effect the acidified milks,

outside of neutralizing the high buffer value of cow's milk and, in this way, making the gastric digestion of cow's milk easier, have on digestion beyond the stomach and on metabolism. He reviews the relation of acid feeding to enzyme action and calls attention to the difference in effect of the various acids used in the acidification of milk—namely, hydrochloric, lactic, citric and acetic—on the acid base metabolism of the organism. He calls attention to the importance of partial, rather than of complete, debuffering of milk and notes that most writers have focused their attention entirely on pepsin and forgotten rennet and the gastric lipase. He believes that hydrochloric acid is the preferable acid to use and gives the reasons for his belief. He notes that constipation results in many instances when acidified milks are used. This is due to an increase in the soaps, especially of the calcium soaps. He calls attention to the fact that, in the normal infant, this increased output of calcium soaps in the stools must affect the percentage utilization of fat unfavorably. He states that it is "fair to conclude that acid administration reduces fat absorption in normal infants, improves it when it has been previously low but does not restore it to normal figures. The inference may be tentatively made that acid feeding is not indicated for the routine feeding of healthy infants, but should be considered chiefly as a therapeutic method for use over a limited period until the disorder has been corrected."

He believes that acidified milk is useful in the type of diarrhea for which Finkelstein originally recommended protein milk. His own experiences have convinced him that a partially debuffered milk, except in severe cases, is as good as the wholly debuffered. He believes that it is of use in "celiac disease" because of the high protein diet which is in general use in the treatment of this condition. The protein given is largely casein, which has a very high buffer value and furnishes, therefore, a specific indication for the use of acid. It is of value in "marasmus," in which the secretory capacity of the stomach for hydrochloric acid is diminished. Fully debuffered milk is indicated at first and a partially debuffered milk during convalescence. He neither practices nor advocates the use of debuffered milk in the routine feeding of healthy infants. In his opinion, acidified milk should be used only for infants with digestive disorders or for those predisposed to them, for those with tetany and perhaps for those with rickets. Hydrochloric acid milk is valuable in tetany because, as Gamble has shown, the chlorine probably causes an increased ionization of the blood calcium. Hydrochloric acid milk is preferable to calcium and ammonium chloride because of its greater palatability and the lack of unpleasant by-effects. He points out that the evidence as to the advantage of an excess of acid

ions in the prevention of rickets is inconclusive. He suggests that acidification of the urine in pyelitis can be brought about as well by the addition of hydrochloric acid to the milk as by giving benzoic acid or acid sodium phosphate.

In conclusion, he states that "acidified milk may be considered to be a useful therapeutic agent for certain specific disorders. As such, it should be given only when there are specific indications, and for periods of time limited by the regression of symptoms. Organic as well as inorganic acids defect metabolism from the normal to a recognizable, though not as yet fully determined extent. For this reason, the routine use of sour milk in the feeding of normal infants is not to be encouraged. For them, modification of cow's milk by dilution and carbohydrate addition remains the method of choice."

Arnold (*American Journal Diseases of Children*, 1926, 31, 668) has studied the influence of acidified milk on duodenal function in infancy. He calls attention to the fact that, under physiologic conditions, the gastric contents that pass into the duodenum are acid in reaction. The secretions from the digestive glands that empty into the duodenum are alkaline in reaction, as are the secretions from the duodenal glands and the mucosa of the duodenum. The hydrogen-ion concentration of the contents of the upper part of the small intestine depends, therefore, on the gastric, pancreatic, hepatic and intestinal secretions. The gastric secretions contain the acid radicals and the pancreatic juice is the main source of alkalies.

It has been shown that the contents of the duodena of infants are acid in reaction and that the infant's small intestine is acid in reaction from the duodenum to the middle or lower part of the jejunum. The portion with the acid reaction is relatively free from bacteria, but when the alkaline reaction begins, the bacterial flora is considerably increased.

It has been shown by many observers that when there is fever there is a depression of the gastric secretion. Moro found a pure culture of *B. Coli* in the duodena of infants with fever. His observations have been substantiated by others. It has also been shown that fever does not change either the amount or the constituents of the pancreatic juice materially.

The only source of acid radicals in the upper part of the small intestine is the stomach contents. These are not in the form of free hydrochloric acid, but of hydrogen-ions bound onto buffers in the gastric contents. The maintenance of a slightly acid reaction in the duodenum and jejunum depends, for the most part, on gastric secretion. In case of an elevation of temperature in a baby who is bottle fed, it would be logical to expect a decrease in hydrochloric acid secretion in the stomach and it would be advisable to decrease the buffers in

the milk to compensate for the lack of acid. This would allow the gastric contents to be maintained at a reaction nearer normal and would not allow unbuffered or almost neutral material to be passed into the duodenum. This should decrease the incidence of nutritional disorders following fever conditions. He states that Black, Ylppö and Demuth have been using this method with excellent results.

He states that the evidence at present available substantiates our conception of gastric function in the baby as being an important chemical mechanism, as it maintains a constant duodenal and jejunal reaction that allows the physiologic process of control of the bacterial flora of this region of the intestinal tract. The upper part of the small intestine is almost free of bacteria, except when the reaction is neutral or alkaline, when a rich bacterial flora develops. This is dependent on a depressed gastric secretion, or better, on the entrance into the duodenum of material that does not contain enough acid radicals to maintain the proper hydrogen-ion concentration in the presence of alkaline secretions entering the lumen of the intestinal tract. This may bring about nutritional disturbances. (This seems to be one of the best arguments for the use of acidified milk which has been advanced.)

DISEASES OF NUTRITION

Herter's Infantilism

Freise & Jahr (*Jahrb. f. Kinder.*, 1925, 110, 205) in investigating the pathogenesis of Herter's Infantilism, did metabolism experiments on two children, 2½ and 2¾ years old respectively. They found a very poor fat and salt absorption and a poor carbohydrate absorption, but a better nitrogen absorption. Clinically as well as Roentgenologically, it could be shown that the poor absorption was due to a greatly increased motility of the stomach and small intestine, as well as of the proximal portion of the colon. After placing this portion of the digestive tract at rest with opium, the absorption approached the normal with a corresponding clinical improvement and a prompt alteration of the stools. This also happened with atropin, but to a much slighter degree. On the basis of these experiments, they concluded that the disease described as Herter's infantilism or celiac disease is dependent upon a vegetative neurosis. This is to be regarded, nevertheless, only as one of the manifestations of a universal constitutional weakness of the whole nervous system. Therapeutically, they recommend an intermittent opium cure which, by affording a calorically sufficient food, can bring the children through severe life-threatening periods.

Dystrophy and Anemia From Goat's Milk

Bruning and Fischer (*Med. Klin.*, 1925, 21, 12) call attention to the fact that anemia of a

severe form is not uncommon in infants fed on goat's milk. They had three severe cases. They conclude that the pathogenesis of this form of anemia is not quite clear. They offer several possible explanations—improper feeding of the goats, an anemia of the animals themselves, an avitaminosis of the milk and a hemolytic effect of the milk as the result of fatty acids of a high molecular composition. They say that there is undoubtedly a constitutional factor, which is responsible, as the anemia develops in only a comparatively small number of infants. They feel that the problem needs further study.

Glanzmann (*Jahrb. f. Kinder.*, 1926, 111, 127) calls attention to the fact that goat's milk differs more in its chemical composition from human milk than does cow's milk. He gives very complete analyses of goat's milk and quotes from many authors. He then calls attention to and describes a class of cases, which do not occur in this country, where exclusive feeding with goat's milk is very uncommon. In these cases there is marked disturbance of the nutrition and also marked anemia. The disturbance of nutrition and the anemia are not parallel. The dystrophy is probably due to a deficiency of Vitamin A in the milk. The anemia is probably due to a deficiency of Vitamin C, as there are associated, in many instances, evidences of scurvy. There is, however, probably some other element at work. What this is is not plain. He calls attention to the difference between anemia due to a deficiency of Vitamin C in cow's milk and in goat's milk. When it is due to a deficiency of Vitamin C in cow's milk, the blood shows evidences of activity of the bone marrow. When it is due to a deficiency of Vitamin C in goat's milk, the blood shows no evidences of activity of the bone marrow. This suggests that some other element besides a deficiency of Vitamin C in the milk may play a part in the causation of the anemia.

Rickets

Wilson (*American Journal Diseases of Children*, 1926, 31, 603) studied the influence of the routine administration of cod liver oil on the prevention of rickets in infants in the Out Patient Department of the New York Nursery and Child's Hospital. The investigation lasted two years and included 210 infants, of whom 132 received cod liver oil, the remaining 78 serving as a control. In her summary she states that—

1. A study of infants aged from one to three months, born in the spring and summer of 1924, receiving graduated doses of from ½ to 1½ teaspoonfuls of a biologically tested cod liver oil, revealed the development of clinical rickets in 91% of the subjects.

2. A more intensive study of 47 infants, aged from 2 weeks, born in the winter of 1925, receiving daily doses of 1, 2 and 3 teaspoonfuls of

a biologically tested cod liver oil, showed the development of clinical rickets in 68% of the cases as compared with 76% of the control series of 30 cases.

3. Ninety-seven per cent. of infants born in the summer and 91% of infants born in the winter who received cod liver oil showed the evidences of rickets.

4. Ninety-seven per cent. of the infants born in the summer and 98% of the infants born in the winter who did not receive cod liver oil showed Roentgenographic evidence of rickets. (It is usually considered, when 97 or 98% show one thing and 2 or 3% another, that the thing which the 97 or 98% show is the normal and that that which the 2 or 3% show is the abnormal. This being so, why, when 97 or 98% of babies show a certain picture Roentgenographically, is not this picture the normal one, and why have not the 2 or 3% of babies who do not show such signs something the matter with them?)

5. Rickets was observed earlier by the Roentgen ray than by clinical examination, being observed in 4% at one month and in 23% at two months of age, compared with a total of 4% at two months by clinical examination alone.

6. By the fourth month rickets was present in the majority of infants of both groups.

7. The early age incidence of the development of rickets observed, indicates the necessity for measures of prevention or control to be instituted in the first month, particularly for babies born in the winter.

8. The correlation of the clinical and Roentgenographic evidence of rickets observed at the various age periods in this investigation indicates that active rickets is encountered most frequently in the first six months of life, and healing rickets after six months.

9. There did not seem to be any relation between the degree of rickets observed and the amount of cod liver oil received.

10. The concentration of calcium and inorganic phosphorus in the serum of infants under five months of age, with early clinical and Roentgenographic evidence of rickets, was found to be within the normal range.

11. A comparison of the degree and incidence of rickets observed in infants receiving and not receiving cod liver oil did not reveal any striking difference. (It would seem from the above statements that, with the present fad of giving all babies cod liver oil, a great deal of cod liver oil was being given unnecessarily!)

12. Infants receiving cod liver oil showed rickets that healed earlier than that of the control series. (This statement suggests that cod liver oil may really be of some advantage, not in the prevention of rickets, but in the prevention of severe rickets.)

13. The nature of the relation of cod liver oil therapy and the development of rickets, as

observed in these studies, would seem to be one of control rather than of prevention.

It is interesting, in connection with the treatment of rickets and spasmophilia by the ultra-violet light, that Orr, Magee and Henderson (*Biochem. Journal* 1925, 19, 569) found that irradiation of lactating goats with the carbon arc lamp reduced the loss of calcium from the body. This was accounted for by a decreased excretion of calcium in the feces and an increased absorption from the intestines.

Spasmophilia

Emmanuele (*Pediatrics*, 1925, 32, 631) used magnesium sulphate in sixteen cases of tetany with favorable results. He gave from 1 to 3 c.c.m. of a 25% solution subcutaneously, repeating the injections every other day until the symptoms were relieved. The convulsions often ceased after the first injection. Laryngospasm was the most resistant type of spasm. The electrical reactions not infrequently became normal after the first injection. There were no skin reactions nor systemic disturbances from the injections. He concludes that this is an efficient method of treatment in all forms of infantile tetany.

Inouye (*American Journal of Physiology*, 1924, 70, 524) tried the effect of giving various carbohydrates in association with varying amounts of casein to thyroparathyroidectomized dogs. He found that the addition of 15% lactose or 20% galactose prevented the development of tetany. The amount of lactose required varied, however, with the amount of casein. No effect was observed from the parenteral administration of lactose and galactose, indicating that their action was in the alimentary tract. He suggests that it is possible that the effect of lactose may be due to the development of acidophilic changes in the intestinal flora. Dextrin, however, which produces similar acidophilic changes does not prevent tetany.

Woodman (*Biochem. Journal*, 1925, 19, 595) found that the administration of extracts of parathyroid had no effect on the weight of adult animals or on the growth of young animals. It had no effect on the deposition of calcium salts in the bone or on creatin metabolism as measured by muscle creatin. The results of Hoag and Rivkin are, however, different and more encouraging (*Journal of the American Medical Association*, 1926, 86, 1343).

They refer to the work of Hjort, Robinson and Tendick, and to that of Collip and his associates with regard to the extraction of a parathyroid hormone and its effect on normal and thyro-parathyreoprivic animals. Hoag and Rivkin treated four cases of tetany in infancy with this extract with satisfactory results. There was rapid improvement in the symptoms and signs and a return of the serum calcium concentra-

tion to normal in from 24 to 48 hours. The continued daily administration of suitable fractions of the initial dose maintained the clinical and laboratory improvement. They believe that a safe tentative dose is about five units of parathyroid extract per kilogram of body weight for each desired rise of one mgm. of serum calcium, the total amount to be distributed over a period of from 24 to 36 hours at 4 to 6 hour intervals. The individual reaction is so variable that the effect should be estimated by means of repeated serum calcium determinations.

A unit of this extract of Collip's is "one one-hundredth of the amount of extract which will produce an average increase of 5 mg. in the blood serum calcium of normal dogs of approximately 20 kilograms weight over a period of fifteen hours."

(It is evident that this method of treatment can, at present, only be used where it can be checked constantly by repeated examinations of the blood as to its calcium concentration. Consequently, for the general practitioner, calcium chloride, hydrochloric acid or the ultra-violet lamp are better. These results are most interesting, however, in showing the control which the parathyroids have over calcium metabolism and, hence, over the development of spasmophilia. They are not in accord with the results which have been obtained in the past from various thyroid extracts, which were nil, presumably because the so called extracts were inert. It is interesting to note how all these writers confuse tetany with spasmophilia, using the terms synonymously. Tetany is, of course, properly, simply one of the manifestations of spasmophilia.)

Wernstedt (*Acta Paediatrica*, 1925, 5, 126) found by a study of the electrical reactions in coughs of all sorts that, when there is increased electrical excitability, there is a tendency for the cough to become spasmodic. In pronounced cases with the typical reactions of tetany the cough at times could not be differentiated from that of pertussis. He raises the question as to whether there is a spasmophilic pseudopertussis.

ANEMIA IN INFANCY AND CHILDHOOD

Reference has already been made to the peculiar form of anemia which develops in infancy as the result of the exclusive use of goat's milk. Bass and Herman (*The Medical Clinics of North America*, 1925, 9, 589) report five cases of infectious mononucleosis in childhood. They add nothing to our knowledge of the subject, but give a very good summary of the symptomatology of this condition, while their cases are characteristic. They call attention to the close resemblance of this condition to the glandular fever of Pfeiffer. It can be differentiated from this condition, however, by the occurrence of a relative and absolute increase in the mononuclear

cells in the blood, and forms a definite clinical entity. Although this condition may occur in people of all ages, it attacks chiefly children and young adults. The illness begins with a nasopharyngitis, which is in no way characteristic. Following this, the cervical lymph nodes, as well as the other superficial lymph nodes and probably the deeper lying nodes, become enlarged. There is also enlargement of the spleen and a low grade fever. The duration of the illness may be a number of months, but it almost invariably ends in complete recovery. The differentiation of this condition from leukemia may at times be difficult. The two points of importance in the diagnosis are the absence of any immature or abnormal forms of white cells in this condition and the slight degree of anemia. In their cases the highest white count was a little over 18,000. The lymphocytes varied roughly between 70 and 90%.

Iron Therapy in the Anemias of Infancy

Bass and Denzer (*Journal American Medical Association*, 1926, 86, 938) agree with "the iron depot theory" of Bunge and accept the views founded on this theory as to the causation of anemia in premature infants and twins and the development of anemia on an exclusive milk diet after the exhaustion of the supply in the liver at birth. They think that their results in estimating the urobilin of infants with alimentary anemia, which showed no increase in hemolysis, prove that Czerny's theory, that alimentary anemia is due to the toxic or hemolytic effect of the fat of milk, is wrong.

They believe that the vague term "secondary anemia" should be discarded and more exact terms used. A more exact classification calls attention to the differences in the etiology and, therefore, to the necessary differences in terms. They show that the anemias secondary to a deficiency of vitamins, as those of rickets and scurvy, should be treated by eliminating or alleviating the cause, not by administering iron. They also state that iron is not indicated in the anemias secondary to chronic infections, syphilis and tuberculosis, the treatment in these conditions being the removal or treatment of the cause.

They call attention to the condemnation of the use of iron in anemia in this country and show that this belief is based on the results of animal experimentation and not of iron therapy in man. They say that it ought not to be necessary to point out the inherent difference between the bled adult dog and the natural anemic premature infant. To be comparable at all, the conditions of an animal experiment must reproduce as closely as possible the clinical picture. The pediatrician cannot translate such animal experimentation in the terms of human pathology. There are too many careful clinical observations

which cannot be lightly put aside. They give a summary of many interesting clinical experiments and results.

They themselves report the cases of two identical twins, aged 1 year, with very similar disturbances of nutrition and with anemia, the blood picture in the two cases being almost identical. One was given 1 dram of cod liver oil and 10 grs. of saccharated ferrous carbonate three times a day. The other was not. The care and feeding of the two babies was otherwise identical. About 6 weeks later the hemoglobin of the baby that received iron had risen 35%, while that of the other had remained stationary. The blood count of one had risen from 3,250,000 to 4,300,000, while that of the other remained stationary. Further than that, the general condition of the one receiving iron had improved markedly and there had been a diminution in the size of the liver and spleen. The general condition of the other one had fallen to such an extent that transfusion was necessary. They also report cases showing more rapid improvement when iron is given than when vegetables and broths are added to the diet. They give other cases to show that iron administered during an infection fails to improve the anemia.

They used saccharated ferrous carbonate in amounts varying from 30 to 60 grains a day, believing that large doses of iron are more useful than small and that results are often obtained with large doses which cannot be with small.

They call attention to the fact that most clinical studies emphasize only the iron content of hemoglobin. There is, however, another aspect of the problem, namely, the protein portion of hemoglobin. Hemoglobin is composed of a protein, globin, and an iron containing part, hema-
tin. The hema-
tin part of the hemoglobin molecule contains a particular molecular group, the pyrrol group, which cannot be synthesized by animals. Milk contains little or none at all of these pyrrol structures.

It is not improbable, therefore, that inorganic salts added to an exclusive milk diet are not utilized, for the reason that other component parts of the hemoglobin molecule, as important as iron itself, are lacking or present in insufficient amount in the milk diet. Hart and others found that hemoglobin can be built from inorganic iron in the diet only when that diet is accompanied by certain organic structures, and further, that milk is not only low in iron but also low in the organic complexes that make possible the building up of hemoglobin. Their results showed that anemia produced in rabbits by an exclusive milk diet was not cured by the addition of iron to the diet. When cabbage and iron were added to the milk diet, the anemia was cured promptly. When an alcoholic iron-free extract of cabbage was added to the milk diet with inorganic iron, the anemia was cured. Chlorophyll, the iron-free coloring

matter of plants, and also an iron-free extract of cornmeal plus inorganic iron, produced the same result. These two different types of plant material evidently contain certain substances soluble in alcohol and free from iron, which are intimately connected with hemoglobin formation.

It is interesting, in the light of these experiments, to note that it is customary to add cereal to the diet at about the sixth month and the vegetable extracts and purées at nine months. When inorganic iron is given to such children, the protein building stones necessary for the synthesis of hemoglobin are probably already a part of the diet and the ingredients of the hemoglobin molecule are, therefore, complete. Thus, empirically, the requirements worked out in the laboratory have been fulfilled.

The value of inorganic iron in the nutritional and constitutional anemias of infancy does not imply the uselessness of dietary or other forms of organic iron. On the contrary, in the prevention of anemias attendant on a too prolonged milk diet, the use of green vegetables, beef extracts and liver still has a well established place in pediatric practice.

The Size of the Liver and the Spleen in Apparently Normal Children

Zamkin (*Archives of Pediatrics*, 1926, 43, 169) calls attention to the difficulty and unreliability of percussion in determining the size of the liver and spleen in early life. His findings are based almost entirely on palpation. He studied 2100 cases, 531 in the first year, 458 in the second to fourth year, 835 in the fifth to ninth year and 276 in the tenth to twelfth year. In the 2100 cases the liver was palpable in 87% and the spleen in 25% of apparently normal infants and children.

In the first year the liver was palpable in 100% of the cases. The distance below the ribs varied from just palpable to 6.5 cm. It was 3.5 cm. below the costal border in 31%. Seventy-seven per cent. were between 2.5 cm. and 5.5 cm. below the costal border in the midclavicular line. The liver was palpable in 94% of the children between the ages of two to four years, reaching from just below the free border of the ribs to 6.5 cm. The predominating distance was 5.5 cm. in 29.6%. Seventy-four per cent. were between 2.5 and 5.5 cm. below the costal border. In the ages five years to nine years, the liver was palpable in 87%, reaching from just below the free border of the ribs to 5.5 cm. The predominating distance was 2.5 cm. in 21%. Seventy-nine per cent. ranged from just palpable to 3.5 cm. below the costal border. In the ages ten to twelve years, the liver was palpable in 50%, reaching from just below the border of the ribs to 6.5 cm. In 84% the range was from just palpable to 3.5 cm.

No relation between the size of the liver and

the nutrition of the child could be made out. The liver appeared to have a greater consistency, however, in the well nourished than in the undernourished children.

The spleen was palpable in 41% of the infants during the first year, in 25% during the second to the fourth year, 18% during the fifth to the ninth year and 10% from the tenth to the twelfth year. 18% of the spleens were 1.5 cm. below the costal border and 5%, 3.5 cm. below the costal margin. No cases with demonstrable signs of rickets were included in this series. In another series of 172 rachitic infants, the spleen was palpable in 45% of those in the first year and 36% of those in the second year. In these rachitic cases, examination of the blood showed that it was secondary anemia and not rickets which accounted for the splenic enlargement.

There was practically no difference in the size of the spleen in the white and black children, 43% being palpable in the whites and 44% in the negroes. There was no great difference between the various nationalities. The type of feeding during the first year had no appreciable effect on the size of the spleen. A large spleen is, as a rule, associated with a large liver.

Scarlet Fever and Measles

Porter in an article in the *Archives of Pediatrics* (*Archives of Pediatrics*, 1926, 43, 197) reviews the work of the Italian School regarding these diseases during recent years. It is impossible to abstract this article, as it is itself really an abstract. It is of great interest in that it shows how different the views of the Italian workers are from those which are at present held in this country as the result of the work of the Dicks and Dochez.

The Pediatric Schools of Italy believe that they have isolated the organisms which are the specific causes of scarlet fever and measles. Their organisms are not streptococci. They state that they have been able to satisfy Koch's laws regarding these organisms. Incidentally, it is of interest that they have found their organisms in the desquamating epithelium in scarlet fever. They have been able, by the use of vaccines, to protect 98% of children against contagion with scarlet fever and, in certain cities, have protected all receptive children by vaccination, their receptivity being determined by means of De Villa's intradermal reaction. Their results in the treatment of scarlet fever with their vaccine are at least as good as those obtained in this country with our serum.

They have found their measles organism in the desquamating epithelium of patients with measles, as well as in the blood, nasopharyngeal discharges, cerebrospinal fluid and bone marrow. As in scarlet fever, only 2% of the children vaccinated against measles contracted the

disease. Much less work in treatment has been done with their measles vaccine. The results were not as striking as in scarlet fever.

The Italian observers are so convinced of the specificity of Di Cristina's organism for scarlet fever and of Caronia's for measles that no attempt is made to segregate children suffering from these diseases. They occupy the same wards, guarded from the disease they have not simply by a protective vaccination with either measles or scarlet fever organism, as the case may be. They are kept side by side with no protection against cross infection other than the protective vaccine. In short—"The Italian literature of the past five years shows that Italian pediatricists of the Roman, Sicilian and Neapolitan schools make the claim that they have: (1) Found and isolated the specific organisms causative of scarlet fever and of measles. (2) Reproduced the disease in animals and in humans. (3) Brought the specificity of the organism to trial against all approved serological tests and uniformly have obtained evidence of their specificity. (4) To have protected susceptible individuals against the disease by inoculating them with killed cultures of the specific agents of the disease. (5) Possibly to have elaborated protective and curative vaccines against both measles and scarlet fever.

"The conclusions of the Latin investigators are so at variance with the inference drawn from work done by American experimenters, especially those of the Dicks and Dochez, that the Italians' criticism of the American efforts has been put into an interesting critical review by Pollitzer. His paper is exhaustive, minute, and logical. He summarizes Italian opinion as follows:

"1. The American authors who claim that the hemolytic streptococcus is the causative organism of scarlet fever have not been able to isolate streptococci of the same group from all the patients examined.

"2. That streptococci, identical morphologically, culturally and serologically with that to which scarlet fever is attributed, have been isolated from healthy individuals as well as from those suffering with other diseases.

"3. The clinical picture resulting from the injection of hemolytic streptococci has not been proved to be scarlet fever, in fact it much more resembles the known clinical state of febrile streptococcus erythema. Many important serological and immunological tests have been neglected and the results of those undertaken are so lacking in concordance that they cannot be accepted in proof of the argument for specificity of the streptococcus as the cause of scarlet fever.

"4. None of Koch's laws has been established for the streptococcus hemolyticus in relation to scarlet fever.

"5. The logical deductions to be drawn from

the painstaking efforts and the extensive reports of the Dicks, Dochez and the other quoted American investigators is that the streptococcus hemolyticus is present very frequently, perhaps constantly, in symbiosis together with the specific causative organism of Di Cristina in patients during the early stages of scarlet fever. It is held that under such circumstances, the streptococcus is responsible not for the disease but for certain of its complications.

"The good results that may follow the use of the Dochez serum are not denied but are attributed to either the neutralization of the streptococcus toxins, which are adding to the patient's burden, or to the non-specific content of the proteins in the serum, acting through its leucolytic power to free specific substances elaborated in the blood and epithelial cells in response to the activity of Di Cristina's organism, a mechanism discussed fully by Caronia."

Stevens and Dochez (*Journal American Medical Association*, 1926, 86, 1110) studied an epidemic of hemolytic streptococcus infection in the Presbyterian Hospital in New York during the winter of 1924 and 1925. They note that the occurrence of scarlatina without a rash has been suspected for many years; that various authors have noted the occurrence of severe angina without cutaneous manifestations among contacts with scarlatina; that these cases have been followed by severe nephritis; and that scarlatina has followed exposure to severe angina. They also say that, considering the variability of the rash in recognized cases of scarlet fever, there has been sufficient justification for believing that scarlatinal angina might occur without the usual cutaneous reaction.

They conclude from their observations and studies, which are too technical to describe, that scarlatinal infection of the throat may occur without a rash; that this type of infection may occur in individuals showing negative skin reactions to scarlatinal toxin; that the Dick test is not a reliable index to immunity to such throat infections with streptococcus scarlatinae. In the cases observed, agglutination reactions with scarlatinal serum and toxin production were closely parallel. There is no antigenic relationship between strains of hemolytic streptococci from acute streptococcus pharyngitis.

Apparently the streptococcus has both bacterial and toxic properties fully developed, and the Dick test, while indicating antitoxin immunity, is not an index of the amount of antitoxin necessary in the blood to prevent bacterial invasion. It is possible, as Rosenow suggests, that the skin reaction is an index of antitoxin immunity and not of the immunity of the throat to streptococcus infection.

Bleyer (*American Journal Diseases of Children*, 1926, 31, 26) found enlargement of the spleen in the majority of two independent

groups of cases of measles seen during three successive winters in St. Louis, and numbering altogether almost 400 persons. All of the children were under twelve years of age, the majority being under seven years. The enlargement of the spleen was coincidental with the eruptive stage, both as to appearance and disappearance, the greatest enlargement, both as to frequency and size, being noted on the third and fourth days of the rash. There was no apparent relation between the severity of the attack and the occurrence and the amount of the enlargement. He believes that the enlargement of the spleen in measles is directly related to the virus of the disease and that enlargement of the spleen should be included in the symptomatology of measles.

PYELITIS

Sauer (*Journal American Medical Association*, 1925, 85, 327) reports a series of fifteen cases of "neonatal" pyelitis, the age of whom at the onset was probably between six days and four weeks, more than half being in the first two weeks. The infecting organism was the bacillus coli in all but one instance, in which it was the bacillus enteritidis. Gastro-intestinal symptoms predominated. The importance of these observations is that it calls attention to the fact that pyelitis may be the cause of obscure symptoms, even in babies only a few weeks old.

Iasch, Fischer and Silber (*Monatschr. f. Kinder.*, 1925, 31, 164) discuss in this paper the pale yellow color of the skin in the pyurias of infancy. They confirm quantitatively the clinical observations of Finklestein and others that the color of the skin in some of the pyurias of infancy is due to a mild degree of jaundice. They found as much as 4.6 mg. of bilirubin to 100 cm. of blood.

Leonard and Wood (*Journal American Medical Association*, 1925, 85, 1855) discuss in this article the present status of hexylresorcinol as an internal urinary disinfectant. They recommend the use of a 2.5% solution of the drug in olive oil, one teaspoonful of which equals 0.1 gm., for children. They say that it is not necessary to give this after meals, as it is with the stronger solutions used for adults. The urine, when hexylresorcinol is taken, is bactericidal. The reaction of the urine makes no difference in its bactericidal action. They state that in chronic infections with the bacillus coli it must be given continuously for from 60 to 90 days in order to insure a cure. They call attention to the facts that bicarbonate of soda and large amounts of water diminish or prevent the action of this drug, because they raise the surface tension of the urine. They should not, therefore, be given with it. They say that it is not suitable in acute cases of pyelitis, in which large quantities of water and soda are needed. It is

useful in chronic cases, but must be given regularly for two or three months.

Scott and Leonard (*American Journal Diseases of Children*, 1926, 31, 241) report a series of twelve cases of pyelitis in infancy and childhood treated with hexylresorcinol, in most instances with favorable results. They believe that it is at times a distinct addition to the therapeutic measures heretofore recommended. They found that there is often a striking improvement in the general health and nutrition before there is any noticeable improvement in the local condition. They used a 2.5% solution of hexylresorcinol in olive oil, finding it the most convenient form for children. It was well borne and is apparently as efficacious as the more concentrated solutions. A teaspoonful of the 2.5% solution contains 0.1 gram. They begin with doses of 0.1 gram three times daily, gradually increasing the dose to 0.2 or 0.3 grams three times daily. Children tolerate relatively larger doses than adults. They have given as much as 0.6 gram three times daily for weeks and months without any evidences of toxic action or gastric or intestinal irritation. They have observed no toxic effects or irritative action on the kidney. To obtain the best results treatment should be persistent. The fluid intake should not be increased and soda should be avoided during the administration of the drug.

PHRENIC NERVE INJURY IN THE NEW-BORN

Friedman and Chamberlain (*Journal American Medical Association*, 1926, 86, 934) refer to the literature of this condition, which was first reported by Kofferrath in 1921. Only thirty cases have been reported in the literature, many of which are probably not really examples of this condition. They feel that its occurrence is probably not as unusual as has been supposed, when the intimate anatomic relationship of the phrenic nerves to the brachial plexus is taken into account. It is reasonable to assume that serious injury to the upper cord of this plexus is quite likely to involve, in some measure, the filaments that make up the phrenic nerve. It is almost always overlooked, however, because the most prominent symptom which it causes is common to numerous pathologic conditions occurring frequently in the new-born.

While it is possible that the phrenic nerve may be injured without simultaneous injury to the brachial plexus, it is not likely to occur. The result of the injury to the phrenic nerve is paralysis of the diaphragm. This is shown principally by disturbances in the respiration. The symptomatology is as would be expected. The diagnosis can be made with certainty, however, only by the Roentgen ray.

Return of function is slower in the diaphragm than in the arm, and is probably not complete even in mild cases for several months. Perma-

nent paralysis may result. The outlook is, of course, very grave if both phrenic nerves are injured.

They believe that treatment of the injury to the plexus and to the arm hastens recovery of the diaphragm. The treatment of the paralysis must, of course, be symptomatic.

THE AMERICAN RED CROSS ROLL CALL

THE Roll Call this year, to enroll members for 1927, will be held as usual from Armistice Day to Thanksgiving, November 11 to 25.

The American Red Cross, with a membership of more than three millions and an additional Junior membership of six millions, has become the recognized agency of the American people for extending service to humanity. Its work is supported through the membership dues secured once a year during the Roll Call.

DEATH RATES OF LARGE CITIES 1925

IN CITIES OF POPULATION OVER 1,000,000 IN NORTH AND SOUTH AMERICA, EUROPE, AND ASIA

Deaths per 1,000 Persons in 1925

Chicago	11.5
Berlin	11.7
New York City	12.2
Vienna	12.9
Philadelphia	13.2
Buenos Aires	13.7
Paris	14.7
Bombay	25.4
Calcutta	32.7

—*Bulletin Chicago Health Department.*

TETANUS IN CONNECTICUT

JULY is the month for special precautions against tetanus or lockjaw because it is the month in which most cases and deaths from this disease occur. The cases and deaths from tetanus reported in Connecticut by months for the past eight years, 1918 to 1925 are as follows:

TETANUS CASES AND DEATHS REPORTED FOR PAST EIGHT YEARS IN CONNECTICUT

1918-1925

Summary by Months

	Cases Deaths			Cases Deaths	
January	4	5	July	30	25
February	4	8	August	17	15
March	6	4	September	15	18
April	2	7	October	16	12
May	5	8	November	10	9
June	11	11	December	11	6
				131	128

—*Bulletin Connecticut Department of Health.*

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12281

A CASE OF DROWSINESS

MEDICAL DEPARTMENT

A married American woman fifty-eight years old entered January 22 complaining of weakness and stupor. The history was obtained from a daughter who did not live with her but had seen her frequently.

Five weeks before admission the patient "caught cold," followed by "pleurisy"—pain in the left lower chest on breathing; never any cough or sputum. This cleared up within three weeks without treatment. The patient continued, however, to sleep as a rule all the afternoon and to go to bed and to sleep early in the evening, as she had done since the onset. Before this illness she had slept only four or five hours a night for years. For the week before admission she had been in bed all the time, under medical care, and was known to have had fever. For the past few days she had slept less soundly, but had dozed most of the time. Five days ago she had diarrhea; this had been better since an enema two days ago. Her appetite had been poor. The day before admission she had a high temperature and headache, relieved by ice bags. She had had some apparent loss of weight and very marked loss of strength. Her mental processes had been somewhat slowed. Before the illness she showed no signs of failure of memory.

She had a family history of "shock," of which her father and mother died at the ages of seventy-five and eighty-four years; a sister (age not given) had also had a "shock."

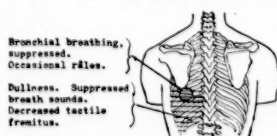
Her past history shows no severe illnesses except "pneumonia" as a child. She once had a severe "quinsy" leaving her with a throat defect which caused her to swallow noisily. Several years before admission she had frequent "bilious attacks" characterized by nausea and malaise but no vomiting or jaundice, and relieved by extraction of teeth. Thirteen years ago she was not well for a time (menopause ?). She had varicose veins and some edema of the legs relieved by going to bed. Except for her short hours of sleep her habits were good.

On examination she appeared old, senile. She was semiconscious, breathing heavily and rap-

idly but without much difficulty. The skin and mucous membranes were pale. There was marked coarse tremor of the tongue. The throat was injected. The soft palate and the mucosa of the cheeks showed pustular patches of exudate. The heart showed no enlargement. The location of the apex impulse is not recorded. The first sound was loud and harsh, the second sound absent (not stated whether general or local). A low rough systolic murmur was heard all over the precordia. All the artery walls were markedly thickened. The blood pressure was 210/90. Examination of the lungs was negative, but unsatisfactory on account of lack of coöperation. A tender liver edge was palpable. There was pitting edema of the feet, ankles and lower legs. The legs showed varicosities and varicose eczema. The pelvic examination, pupils and reflexes were normal. The fundi were negative except for arteriosclerosis.

The urine was brown and cloudy at the first of two examinations, specific gravity 1.016, a trace to the slightest possible trace of albumin at both, the sediment of the first specimen loaded with leucocytes and bacilli, 5-10 red blood corpuscles per high power field, much clumping, a few cellular casts, one waxy cast. Sediment of the second specimen (catheterized) showed 1-6 leucocytes per high power field; culture showed a profuse growth of pneumococci and colon-like bacilli. Blood examination showed 15,250 leucocytes, 89 per cent. polynuclears, 70 per cent. hemoglobin, 3,808,000 reds, smear normal except that the platelets were slightly decreased in numbers. The non-protein nitrogen was 62 mgm. per 100 c.c. A Wassermann was negative. One throat culture showed staphylococci, another streptococci; no diphtheria bacilli.

The patient ran a temperature of 101.2° to 104.1°. The pulse was 115 to 138, the respiration 25 to 53. The day after admission the lung



signs were as shown in the diagram. A throat consultant reported, "I believe the whole oral picture is due to lack of oral cleanliness and dehydration of tissues." The patient failed rapidly, and January 24 died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

The remarks that I make in these cases are supposed to represent what I think anybody ought to have go through his mind as he con-

siders a patient clinically from his own history, not any special notions of my own.

We ought to say to ourselves, What are the commonest causes of stupor in a married woman of fifty-eight? She is at the arteriosclerotic age, therefore the age when cerebral hemorrhage is probably the commonest cause of stupor. If she were younger that would not be the right answer, but at fifty-eight, supposing we could know nothing more, cerebral hemorrhage is the commonest; next to that uremia, next to that diabetes. Those are the only three common causes, if we leave out diseases which would certainly be in the history, such as alcoholism, morphinism, sunstroke. Such diseases would not begin in this way.

We put "pleurisy" in quotation marks. We do not commit ourselves to the belief that it is pleurisy. It is much better to call it a pain rather than a pleurisy pain.

One wonders just what is meant by "catching cold",—perhaps coryza, perhaps sore throat. We can have coryza and sore throat without cough or sputum.

As we read on we begin to wonder about something different from what we have spoken of. I do not believe her sleeping is making up for lost time. We have fever, probably infection, plus sleepiness. Naturally anybody's mind at this time begins to think of encephalitis lethargica, not as a diagnosis but as a possibility.

A PHYSICIAN: You made the statement "Now we begin to think of something different" before we had the history of fever.

DR. CABOT: Yes. I had begun to think of it before I knew there was fever. I did not know that there was; I thought there might be. If anybody said, "I know she did not have fever" I should not have thought of encephalitis. Uremia would not have done that, cerebral hemorrhage would not have done that, and diabetes would not have done it. So my mind begins to shift at that point, as I think anyone's should.

Dozing most of the time is exactly what an encephalitis patient does. They can be roused, but they are dozing.

Very possibly this was a diarrhea due to constipation, due to the irritation of a fecal mass, and stopped by an enema.

The temperature, headache, loss of weight and strength do not help us. All that goes with any infection.

Why cannot this be meningitis? What is there antagonistic to meningitis?

PHYSICIANS: She had headache only in the end. It did not begin with headache. There is no evidence of vomiting. Meningitis patients are irritable.

DR. CABOT: I do not know that we really know that this person was not.

A PHYSICIAN: She is getting better.

DR. CABOT: That is against meningitis.

What variety of meningitis may go on for weeks and weeks?

A PHYSICIAN: Tuberculous.

DR. CABOT: Yes, and occasionally one of the other kinds. I have seen meningococcus meningitis that lasted for weeks and weeks, chronic cases. But tuberculous meningitis ought to be in our minds. Nobody could rule it out. What very early symptom of sleeping sickness is not here yet?

A PHYSICIAN: Diplopia.

DR. CABOT: Yes. That is one of the cranial nerve symptoms. First we have fever, second sleepiness, third cranial nerve symptoms, in some cases plus choreic movements.

We begin to wonder if this can be a queer kind of cerebral hemorrhage. Because arteriosclerosis, from which comes shock, is hereditary. Arteries of a certain type, a poor type, do run in families.

"Bilious attacks" relieved by the extraction of teeth is interesting if true. I would not deny it, but would not be very sure of it. If we were to extract teeth for all the people who have bilious attacks there would be very few teeth left.

This is a past history taken as a matter of conscientious routine. They have asked all sorts of questions, and I should say there is nothing in it that helps us at all.

Varicose veins come to mind as a possible cause of pulmonary embolism or of cerebral embolism, but we have no indication of either of those things here.

NOTES ON THE PHYSICAL EXAMINATION

We do not expect any elevation of blood pressure in sleeping sickness.

She probably could not be made to breathe deeply. All they could get was the little they could hear on superficial breathing. In some people we cannot hear anything on auscultation unless we can make them breathe deeply.

Supposing we are sure of a tender liver edge, that points to passive congestion practically every time. But we have nothing else in the case to suggest passive congestion, so that I am surprised. But it may be that the heart has been failing from high blood pressure.

A PHYSICIAN: There is edema of the feet.

DR. CABOT: Yes, but she had varicose veins. Therefore we cannot be at all sure that the edema was not due to the varicosities.

What should we infer from this urine? I should say very little. The gravity is not high, neither is it very low. It is one of the borderline gravities that does not help us. The number of leucocytes in the specimen by catheter is not enough to point to anything in particular. "Waxy casts" generally mean nephritis, but I should not want to make a diagnosis on one waxy cast, and that is all we have. In sick people who have been in bed in poor condition

for a good while we get a good many positive cultures like this. I should not make any definite inferences from it.

She has had something which has been going on for a good while to bring this anemia. This blood amounts to a secondary anemia with polynuclear leucocytosis.

The non-protein nitrogen is rather high, not terribly high.

Still I am in the dark.

We cannot make any particular conclusion from the throat cultures. We get those organisms in the throat any time.

We should not say "suppressed" bronchial breathing; that is a poor word. We should say "feeble". This lung examination is not very satisfactory. It might perfectly well be due to a little fluid slightly compressing the lung and causing bronchial breathing in the compressed portion. It might be due to a big spleen and liver doing the same thing. It might be a pneumonia. I am rather inclined to think it is pneumonia, but it is not at all clean cut.

DIFFERENTIAL DIAGNOSIS

I think this is a matter of balancing guesses, and do not feel at all sure we shall hit it anywhere near. Let us sum it up. It begins with sleepiness and fever.

A PHYSICIAN: Before that she had pleurisy and pain in the left lower chest.

DR. CABOT: She said it was pleurisy, but we do not know that it was.

A PHYSICIAN: There is no history of how long she was under observation.

DR. CABOT: Two days. This is just the sort of case we go wrong on when we have only forty-eight hours to watch it. She begins with sleepiness and fever and nothing else that I can put stress on, though I admit that that pain called pleurisy might be pleurisy and so might be an indication of tuberculosis which later showed in the brain. But I do not think it. Our history really consists of fever and sleepiness,—nothing else for over two weeks. Then on physical examination we have a high blood pressure, we have arteriosclerosis in the retinal arteries, and the sort of auscultatory signs over the heart that we often get with a sclerotic aorta. We have swelling of the legs which may be due to passive congestion, and a tender liver which strongly suggests it. We have a urine that is compatible with nephritis, not characteristic, but not sufficient to exclude nephritis. We can have a chronic nephritis with urine like this. If we had had her here longer we should have made the functional test, the fixation of gravity test, and the amount of urine passed at night.

A PHYSICIAN: How about sugar?

MISS PAINTER: The urine was negative for sugar.

DR. CABOT: So we do not need to follow that further, especially with a gravity of 1.016.

We have a secondary anemia and polynuclear leucocytosis, and that must not be forgotten, because sleeping sickness would never cause that. Cerebral hemorrhage would never cause that. Diabetes would never cause that. Straight heart disease would not cause it. Malnutrition would not cause it. We have to think of the rather few things that can cause an anemia in an elderly person.

A PHYSICIAN: Nephritis.

DR. CABOT: Nephritis I was very skeptical about until we got to that point. But since I saw that figure on the red cells it is the thing that on the whole seems to me most likely so far. Suppose it was nephritis; what have we here against it? The sleepiness might be uremia, not the ordinary kind, but not impossible in any way. Uremia cannot cause fever. That does not rule it out. She may have something else. Nephritis is often complicated with something else, infection in the lung. So although the sleepiness cannot be accounted for by the lung and the fever cannot be accounted for by the uremia, by taking those two things together we can account for the facts. So sleepiness, high blood pressure, presumably a big heart (I mean by the high blood pressure—the record said normal, but I do not care about that so long as I have a high blood pressure—I believe there is going to be a big heart just because of that.) tender liver, and so on, these make us think of a rather failing heart, which we often have with nephritis, a urine which is all right for nephritis, and a blood which very much suggests it.

A PHYSICIAN: I think it is noteworthy that the first lung symptoms were on the right and the final on the left.

DR. CABOT: The first was the pleurisy pain. That is not much. I do not think we need pay much attention to the fact that the so-called pleurisy pain was on one side and the final signs on the other. But we are looking at the back here, so they are really on the same side.

What are the difficulties with calling this pneumonia? In the first place she does not cough. Can a person have pneumonia who does not cough? Yes, she can, and in exactly the sort of case we have here—in these insidious pneumonias—they often do not cough. The leucocytosis favors it. The temperature, pulse and respiration are all right.

A PHYSICIAN: What is meant by "a family history of shock"?

DR. CABOT: It means a family history of cerebral hemorrhage. Cerebral hemorrhage means cerebral arteriosclerosis and therefore brings us back to a disease which we know does run in families,—arteriosclerosis.

A PHYSICIAN: How about an acute pyelitis following pneumonia?

DR. CABOT: It is perfectly possible, but it could not be an important element in causing

death. It is a perfectly good point because of the pneumococci and the leucocytosis.

A PHYSICIAN: If this patient died and you were the family physician, what would you tell the family?

DR. CABOT: I should say chronic nephritis and pneumonia, the underlying cause nephritis, the immediate cause pneumonia. I should say Dr. Richardson will find chronic nephritis, a hypertrophied and dilated heart, probably a pneumonia; though I feel quite uncertain about those signs. It might be acute pericarditis without any physical signs, causing just as much fever and leucocytosis as this. I am influenced towards the pneumonia a little by the pneumococci in the urine,—pneumococci in the blood, deposited in the lung and coming out through the kidney.

A PHYSICIAN: She had varicose veins. What is the probability of thrombosis with embolism, pulmonary, and possibly small emboli in the brain?

DR. CABOT: What do you say to this: emboli in the veins; why should they not have gone into the lung and thereby have killed her? We have difficulty in making that diagnosis, because that usually happens at a given moment. Something suddenly happens. In this case nothing is sudden. Another point is the anemia. Anemia cannot result from any such cause. We have to have some chronic cause for that anemia, and I can think of no chronic cause except the one I have mentioned.

A PHYSICIAN: Malignant disease of the lung?

DR. CABOT: Malignant disease of the lung would cause anemia, and might cause these chest signs. What is the objection? Fever, in the first place, without any evidence of pus in the lung. Secondly, all that sleepiness, which does not ordinarily go with malignant disease. Thirdly, she died too quickly. I will vote against malignant disease, though it is a perfectly proper thing to be considered in differential diagnosis.

A PHYSICIAN: What about miliary tuberculosis?

DR. CABOT: It is always a good thing to consider miliary tuberculosis. It may come in any case and simulate anything, just as Dr. Solomon told us that syphilis can simulate any disease of the nervous system. What is against it? Age, in the first place, fifty-eight. I do not think we have ever had a case of miliary tuberculosis at fifty-eight, especially when there is no focus in the body from which it might be spread. If she had an old hip disease or tuberculosis of the kidney or an old phthisis, then it might be possible.

A PHYSICIAN: Could the bad teeth be a tuberculous focus?

DR. CABOT: I do not believe there is any con-

nection between tuberculosis and the teeth. She has had some symptoms whereby her teeth were removed. But I do not think that really plays a part in this case.

A PHYSICIAN: Do you consider a four and a half million red count a normal count?

DR. CABOT: No, I do not. The red count is a very fixed thing,—five millions or more. Men often have six and a half millions. Women do not have much below five.

A PHYSICIAN: We used to be taught in school that it was four and a half for a woman and five and a half for a man.

DR. CABOT: I have been counting blood for a great many years, but I do not agree to that. I think the error is made by counting in a good many women at the age when menstruation first begins. Then there is a time when the reds are often down to four and a half million or less. If we take the whole range of ages in women I would not agree to 4,500,000 as normal.

A PHYSICIAN: Have you seen an empyema without cough?

DR. CABOT: Yes. Could this be empyema? The physical signs are all right for empyema. Is there anything that would rule out empyema?

A PHYSICIAN: She died too soon.

DR. CABOT: Yes. She could not die of empyema so quickly as that. Osler died of it, but after weeks and weeks of sickness. So that although I do not deny that there may be empyema, I should say it cannot be the main thing. It could not be the cause of death.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Bronchopneumonia, lower lobe of the left lung.
Arteriosclerosis and hypertensive heart disease.

DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic nephritis.
Hypertrophy and dilatation of the heart.
Pneumonia.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesion

Acute endocarditis of the tricuspid valve.

2. Secondary or terminal lesions

Embolie thrombosis of branches of the right pulmonary artery.

Slight hypertrophy and dilatation of the heart.

Empyema, left (pneumococcus).

Compression atelectasis of the lower lobe of the left lung.

Congestion of the lungs and resolving pneumonia.

Infarcts of lower lobe of right lung.

Fatty metamorphosis of the liver.

Soft hyperplastic spleen.

3. Historical landmarks

Old focal tuberculosis of the lung.
Chronic pleuritis.
Slight localized chronic peritonitis.
Small osteoma of the lung.
Ulcer of the duodenum.

DR. RICHARDSON: Anatomically she was older than stated.

We were not allowed to examine the head.

The gastrointestinal tract was negative except that there was a definite ulcer in the duodenum just below the pylorus. It was one centimeter in diameter, with rounded margins, intact base one millimeter thick, and a few old adhesions on the peritoneal side.

The liver was seven and a half centimeters below the costal border. The diaphragm on the right was at the fifth rib, on the left at the fifth interspace. Pleural adhesions: the right lung was bound down by old adhesions; on the left the apex was free, but midway there was a row of old adhesions extending around the lung. In the right pleural cavity the adhesions were wet, but there was no pus. On the left, below the midzone of adhesions, 600 c.c. of pus,—empyema.

In the right lung there was some congestion, in the lower lobe extending from the pleura inwardly there were several infarcts, and in branches of the pulmonary artery leading to them small embolic plugs. We of course must find a source for those. The lower lobe of the left lung showed compression atelectasis from the pus. The pleura was coated with fibrinopurulent material. There was an area of resolving pneumonia and some purulent infiltration over small areas in that region.

The pericardium was frankly negative. The heart weighed 300 grams. That for her was slightly enlarged.

DR. CABOT: Thank you for as much as that. He did all he could for me.

DR. RICHARDSON: There was slight hypertrophy and dilatation of the heart. The tricuspid valve measured fourteen centimeters (slightly increased). The valves were negative except that about the middle region of the tricuspid valve there was a soft thrombotic mass two by one and one and a half centimeters, hemispherical in shape,—endocarditis of the tricuspid valve. It was a pneumococcus endocarditis. It is clear now where those emboli came from in the branches of the pulmonary artery.

The aorta showed only a slight amount of fibrous sclerosis, and the great branches were negative.

The liver was large and very wide. It showed no definite lesions except for some fatty metamorphosis. The spleen weighed 202 grams, slight-

ly enlarged, a soft spleen going with the infection.

The kidneys weighed 308 grams. That is a good enough weight. They showed no nephritis whatsoever. The uterus and adnexa showed senile change.

The cover glass from the empyema pus showed pneumococci, and sections from the tricuspid vegetation showed pneumococci.

As a matter of record there was an old focus of tuberculosis in one of the lungs as well as a small piece of bone.

DR. CABOT: I should think this was as clean a miss in diagnosis as I have made for a long time. I am only sorry that someone did not get the source of the empyema, which I suppose was in the malignant endocarditis which I did not think of. I remember when we were discussing acute endocarditis before I said that in the cases where we did not have embolism or did not know it, and did not have a blood culture, we have nothing except a fever and a heart murmur, and that those are the cases where we go wrong. We had here fever and a heart murmur and some signs in the lungs which in the light of hindsight are quite easy to interpret. The anemia, which I interpreted quite wrongly, was due to the endocarditis, which almost always produces such an anemia. I have been fooled before on somnolent cases which turned out to have endocarditis. But yet when I look back on it I think I shall be fooled again if we do not have any evidence of emboli or positive blood culture. I think I shall be fooled in the same way again.

A PHYSICIAN: Cannot it have been a primary pneumonia?

DR. CABOT: Yes, that is perfectly possible. Have you any guess about that, Dr. Richardson?

DR. RICHARDSON: It may have been.

DR. CABOT: The infection may have started in the heart and gone to the lung, and may have started in the lung and gone to the heart. I do not see how we are going to decide which is cart and which is horse, whether the lung started up the endocarditis or the endocarditis started up the lung.

A PHYSICIAN: May I ask what was the clinical diagnosis in the ward?

DR. RICHARDSON: Bronchopneumonia and hypertensive heart.

A PHYSICIAN: What about her sleepiness?

DR. CABOT: I am going to attribute that to septicemia now.

A PHYSICIAN: How about the high blood pressure? Was that the same argument? It could not have existed very long.

DR. CABOT: I do not know what to say about the high blood pressure. Was it taken more than once?

MISS PAINTER: Only once.

DR. CABOT: It may have been a mistake, but

of course we have to argue on the facts. That is one of the things that misled us most. There is nothing in what Dr. Richardson found to account for a high blood pressure.

A PHYSICIAN: How do you account for sleepiness?

DR. CABOT: Sepsis in any form does cause sleepiness,—general septicemia without heart localization or with heart localization. And I now remember seeing other cases like it, but I forgot them at the time.

A PHYSICIAN: Should she have chills and sweating?

DR. CABOT: Yes. Often; not always.

A PHYSICIAN: I do not think we should attempt to make a diagnosis on a case like this without a needle and an X-ray plate, and then I do not think we could have missed this trouble.

DR. CABOT: Suppose you had found an empyema, which is what a tap would show: would that have told you that she had endocarditis?

A PHYSICIAN: No, but it would have called for drainage over two weeks before.

DR. CABOT: Do you think that heart would have recovered if that chest had been drained?

DR. RICHARDSON: No.

DR. CABOT: Of course within two days we do not ordinarily get around to an X-ray in bed. We could not have moved this patient at all in the hospital. I think that if we had seen her earlier it is perfectly true that we should have had an X-ray. As it was I am not surprised in missing this diagnosis.

A PHYSICIAN: What should have been her hemoglobin normally at that age?

DR. CABOT: One hundred per cent.

A PHYSICIAN: One hundred per cent. normally at all ages?

DR. CABOT: Yes, except in childhood and at puberty in women.

A PHYSICIAN: The white count could have varied five to ten thousand?

DR. CABOT: Yes, it could perfectly well and still be normal. So we have to leave it unsettled whether it was a primary pneumonia with secondary endocarditis or a primary endocarditis with embolic pneumonia.

A PHYSICIAN: Would you say now that the cause of death was septicemia?

DR. CABOT: Yes.

DR. RICHARDSON: Of course a pneumonia gives a source for the septicemia. That is the thing that would make one lean towards pneumonia.

DR. CABOT: That is, a primary endocarditis is not very often pneumococcus.

DR. RICHARDSON: No.

DR. CABOT: The fact that this infection was pneumococcus makes it a little more likely that it started in the lung and went to the heart. And if we had done what has been said as to treatment, as to getting after the lung and

draining it earlier, it might have saved the patient.

CASE 12282

A CASE OF CHRONIC JAUNDICE AND SURGERY

MEDICAL AND SURGICAL DEPARTMENTS

A married American woman forty-six years old entered October 17 complaining of jaundice and nervousness.

For ten years she had had "bilious attacks"—nervousness and severe frontal headaches followed soon after the onset by vomiting. The vomitus was at first somewhat whitish, for the most part yellowish. The attacks usually came on just after she got up in the morning and lasted twenty-four hours. The day following she felt perfectly well. The attacks occurred about once in three weeks and did not become more frequent or severe. Eight years before admission, beginning with a regular menstrual period, she had daily flowing for three months. The cause was unknown. She had no other menstrual irregularities. For some years before the menopause, which she passed the January before admission, she had slight leucorrhoea just before catamenia. This ceased at the menopause. The July before admission the "bilious attacks" ceased, but the nervousness increased. In August she found that her sclerae had a yellowish tinge. Soon her whole body became yellowish. The color deepened gradually, not by exacerbations. Since July she had had persistent itching and "hives." X-rays taken recently at a hospital showed gall-stones and "a thickened gall-bladder." For four weeks her stools had been light yellow and her urine dark brown. She had lost ten pounds in twelve months.

The family history and past history were negative.

Examination showed a well nourished woman with moderate jaundice of the skin and mucosae and many small scabbed lesions scattered over the body and extremities. The apex impulse of the heart was strong and diffuse in the sixth space, midclavicular line. The percussion measurements are not recorded. The sounds and action were normal. There was a faint systolic blow over the precordia. The blood pressure was 160/100. The lungs were clear. The abdomen was negative. Vaginal examination showed a firm nulliparous cervix pointing posteriorly. The fundus was small and anterior. The vaults were clear. The extremities, pupils and reflexes were normal.

The amount of urine before operation is not recorded; specific gravity 1.010 to 1.015, color brown at one of three examinations, a very slight trace of albumin and much bile at the first, 1 to 5 leucocytes per high power field in two of three

specimens of sediment. The blood showed 10,100 leucocytes, 62 per cent. polynuclears, hemoglobin 60 per cent., 4,200,000 reds, achromia, diffuse polychromasia, anisocytosis, no microcytes or macrocytes, no poikilocytosis, platelets diminished. Bleeding time $4\frac{1}{2}$ minutes, clotting time 14 minutes, clot retraction inside of one hour. Wassermann negative. No bile was found in a stool specimen.

Before operation the temperature and respiration were not remarkable; the pulse was 120 to 80.

October 22 operation was done. That afternoon there was oozing from the wound. The pulse was rapid and poor. The patient vomited old blood. Transfusion of 500 c.c. of blood was done and later of 800 c.c. more. She was still in poor condition after the transfusion. The next day she was given parathyroid extract and a glucose subpectoral. The blood pressure was still very low and the pulse rapid. There was not much drainage from the tube. October 24 the bleeding time and the clotting time were improved. The blood pressure and the pulse were better. She was continually nauseated.

That evening she suddenly became violent, with actions of a convulsive nature, and seemed unable to speak; her skin became cyanotic, the respirations slow, the pulse weak. Within fifteen minutes she died.

DISCUSSION

BY CHESTER M. JONES, M.D.

The essential points in the diagnosis of this case are the obstructive jaundice of more than three months' duration not associated with pain or loss of weight, and a period of bilious attacks over the past ten years.

Physical examination revealed nothing except the usual findings in a case of obstructive jaundice, with the diagnosis confirmed by stool and urine findings. There was a moderate anemia. The other laboratory findings are of little importance. The clotting time of fourteen minutes suggests some interference with the mechanism of coagulation. It is frequently found in cases of prolonged jaundice, but such a figure is almost within normal limits. Unfortunately the character of the clot is not mentioned.

X-rays taken at this hospital failed to show any evidence of gall-bladder disease or cholelithiasis.

The diagnosis obviously lies between one of three possibilities, namely stone in the common duct, cancer of the head of the pancreas and severe infectious jaundice. The absence of any attacks of biliary colic is rather against the diagnosis of cholelithiasis, but does not rule out this condition. No frank loss of weight in the presence of a pronounced jaundice is rather

against the possibility of cancer of the head of the pancreas. Malignancy of this organ at times is associated with very little loss of weight during the first stages of the disease. A loss of ten pounds in weight even if occurring during a period of two or three months can be easily accounted for by prolonged obstructive jaundice of any type. In view of the patient's rather good general condition and in the absence of any distinguishing physical signs or characteristic story I am inclined to think that the patient may fall into that rather uncommon group of severe infectious jaundice. Against such a diagnosis are the absence of splenic enlargement, the absence of hepatic tenderness or enlargement, the normal white count, and the absence of a marked leucocytosis. It is a fact however that in prolonged cases of infectious jaundice in elderly people the typical picture associated with this disease may be absent, although enlargement of the liver is practically always present. Inasmuch as I think the probable diagnosis is infectious jaundice with a definite hepatitis, I believe the liver was enlarged. Speculations as to the probable diagnosis in such a case however are usually only of theoretical interest, and in the absence of more definite evidence laparotomy was the logical procedure.

PRE-OPERATIVE DIAGNOSIS

Malignant disease of the pancreas.

OPERATION

Gas-ether. A right rectus incision in the upper abdomen was made. The liver was dark, smooth and normal in consistency. The lower border of the right lobe was at the level of the umbilicus. The left lobe was also much enlarged. There were some old adhesions between the liver and the diaphragm. The gall-bladder was filled and somewhat larger than normal, but was not tense. The common duct was only slightly enlarged. No mass could be felt in the pancreas or the duodenum. The duodenum was opened and the papilla examined. A section of liver was removed for examination. A tube was put into the common duct and a probe passed easily from the common duct into the duodenum. There was no evident mechanical obstruction. The condition was probably due to some condition of the liver.

PATHOLOGICAL REPORT

A small fragment from the liver showing on microscopic examination scattered areas of capillaries filled with bile pigment. There is no evidence of cirrhosis.

A separate smaller fragment from the region of the pancreas shows on microscopic examination structure of a normal lymph node.

FURTHER DISCUSSION

The only discrepancy between the operative findings and those noted before operation is the marked enlargement of the liver, which extended to the level of the umbilicus. In cases of infectious jaundice it is usually the case that the liver is enlarged and the edge is somewhat tender, and had such a finding been made prior to operation the diagnosis of infectious jaundice would certainly have been justified.

The subsequent outcome of this case illustrates practically the danger of operating upon cases of obstructive jaundice. However, at the time of admission the clotting time was said to be only fourteen minutes. It is obvious that after the operation there was a break in the normal clotting mechanism. A prolonged coagulation time under almost any circumstances must be taken as very direct evidence of seriously impaired liver function. It has been my experience that in the pre-operative preparation of such cases the giving of sufficient calcium and glucose is a very necessary precaution to prevent unfortunate accidents. In this particular case we have no figures to show that the clotting time was prolonged just before operation. It would seem however that in such a case, where the function of the liver is obviously much impaired, the desirable method of treatment before operation would be the administration of calcium chloride intravenously in connection with the use of large amounts of water and glucose. It is my opinion that even when the clotting mechanism has been apparently restored to normal in such cases the shock of prolonged ether anesthesia may so disturb the hepatic function as to cause a secondary prolongation of the clotting time and along with it symptoms from hepatic insufficiency. Such was apparently true in the case under discussion. The use of parathyroid extract and of glucose was apparently too late to be of any value. The patient died from severe hepatic insufficiency, evidenced primarily by oozing from the wound.

This case illustrates in a very striking way first the difficulty of diagnosis in cases of obstructive jaundice without many symptoms, and secondly the almost unavoidable operative risk, which is probably greater when the jaundice is associated with a chronic infectious process than it is in cases of cancer of the head of the pancreas or stone in the common duct.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Infectious jaundice.
Cerebral embolus?
Operation, exploration for jaundice.

DR. CHESTER M. JONES'S DIAGNOSIS

Infectious jaundice.
Operative shock.
Hepatic insufficiency.

ANATOMICAL DIAGNOSIS

Cholecystectomy and duodenotomy.
Icterus.

Extensive hemorrhage into the peritoneal cavity and small intestine.

DR. RICHARDSON: The death in this case was due to hemorrhage. There was a long operation wound, the margins infiltrated with blood, and blood clot. Much blood ran from the wound. In the peritoneal cavity there was a large amount of blood and clot, the clot weighing 800 grams. The examination was made through the wound of operation, but still we found out enough to rule out many things.

The appendix was negative, as also the esophagus and stomach. The small intestine contained much blood and blood clot, and along the wall of the first portion of the duodenum was a row of sutures.

The liver was at the costal border. The heart and the thoracic organs were negative. The portal vein and radicles were negative.

The liver was of fair size, the tissue of good consistence and bile-stained. Microscopic examination contributed nothing more than the piece taken during life. There was slight infiltration of the portal canals by lymphocytes. The pancreas and the kidneys were negative. No new growth was found in the region of the pancreas or the glands or elsewhere.

The gall-bladder showed a good mucosa, no stones, and was of good size. The bile-ducts were free and frankly negative. In the wall of the common duct there was a row of sutures.

The skin and conjunctivae showed a well marked icterus.

CASE 12283

DIFFERENTIAL DIAGNOSIS IN A CASE
OF RECURRENT LESION OF THE LIP

SOUTH MEDICAL DEPARTMENT

An English mechanic fifty-three years old entered for the first time July 13, four years before his final admission, for treatment of a lesion on the lower lip, which had started six weeks before with a barber's cut, constantly irritated afterwards by a pipe. This caused a crack which crusted over but never healed.

His past history was negative.

Examination showed many moles on the chest and back, two or three of them warty. On the lip was a hard crusted swelling the size of a large pea.

A V-shaped excision of the tumor of the lip was done, with dissection of the glands of the neck. A pathological report showed epidermoid carcinoma.

In August, a year later, he wrote that he was feeling well and had been working ever since he left the hospital.

The middle of the following November he noticed a little crack in his lip at the site of the operation.

December 1 he was readmitted to the hospital.

Examination was as before. The operative scar on the lower lip was replaced on the mucous tissue of the lip by a scab and by tissue which felt infiltrated. No glands were felt in the submaxillary or submental spaces, and no enlarged glands elsewhere.

December 3 operation was done. A Wassermann was moderately positive.

A South Medical consultant gave the opinion that the man had syphilis. "There are half a dozen erythematous spots on the back over the scapulae that might perfectly well be luetic. The previous operation precludes enlarged glands. He should make good progress under arsphenamin." A dark field examination was negative. Antisyphilitic treatment was started. December 16 the patient was discharged to the South Medical Out-Patient Department.

Records of the Department show that he was given twelve injections of diarsenol and fifteen intramuscular injections of gray oil during the following year. The following April he was seen for a traumatic right orchitis. A year later a Wassermann was weakly positive. In February, two years after his last discharge, there was a small ulceration in the old scar. A Wassermann was strongly positive.

February 7 he entered the hospital for the third time. He had felt perfectly well since the last operation. Two weeks before admission he noticed a small indurated button on the left side of the old incision. The lip at this point had bled a little on several occasions and there was usually a little serum over it.

The right pupil was somewhat irregular. Examination was otherwise negative, except that in the scar of the old excision there was a small ulceration which kept moist with serum. There was a tiny spot of induration on the left side of this old incision.

February 8 operation was done. The pulse and respiration were markedly retarded after it. The temperature rose to 100° two days later, but on and after February 13 was normal. Some of the sutures showed slight infection. By the 13th the temperature was flat, and by the 20th the wound was well healed. There was excellent result from the operation. The blood Wassermann was still positive. That day he was discharged to the Out-Patient South Medical Department.

DISCUSSION

BY AUSTIN W. CHEEVER, M.D.

It seems to me that this first pathological report was in every way what was to be expected. The lesion on the lip probably was due to smok-

ing. The moles on the chest and back were irrelevant.

The only condition that one would think of in a case of this kind returning to the hospital would be a recurrence. That was a year and a half after his operation. Of course there could not be glands at this time, as they had been removed.

I am not certain, but I believe this Wassermann was taken the day he entered, but the report was not obtained until after the operation was done. The dark field examination was done with the utmost care, and as I remember, repeated two or three times. It was felt that the reason for a negative dark field was probably because the whole primary lesion had been removed, including the wall of round-cell infiltration inside of which the treponemata lived, for Dr. Smith and Dr. Lloyd showed some years ago that in a primary lesion that has not been tampered with by mercury one ought to be able to get a positive dark field in upwards of ninety per cent. of the cases.

The orchitis may have been specific, but it is rather early in the disease to expect that, and the course of the trouble was not really that of a luetic orchitis.

PRE-OPERATIVE DIAGNOSIS

Recurrent carcinoma of the lip.

OPERATION, SECOND ENTRY

Under novocain a V excision of the skin and growth was done.

PATHOLOGICAL REPORT

Microscopic examination shows a dense infiltration of the corium with plasma and lymphoid cells. The small blood vessels show thickening and proliferation of their endothelium. There is a superficial ulcer in the epidermis. The interpapillary processes are somewhat elongated. These appearances suggest a primary lesion, although sections for Levaditi's stain are not available.

Syphilis.

FURTHER DISCUSSION

Of course there was nothing to remove in the glands.

With a weakly positive Wassermann some time before one might possibly consider the chance of a second primary lesion of the lip. That would not be likely when the Wassermann had been weakly positive so recently. The type of lesion as described is decidedly against that, because primary lesions ought not to bleed at all, being erosions due to endoperiarteritis and occlusion of the blood vessels below.

PRE-OPERATIVE DIAGNOSIS

Carcinoma of the lip?

OPERATION THIRD ENTRY

Ether. The growth and scar were excised with good margins of normal tissue. Plastic reconstruction of the lip by removing two triangles from each side of the upper lip.

PATHOLOGICAL REPORT

Miscroscopic examination shows adult acanthoma with pearly formation.

Epidermoid carcinoma.

FURTHER DISCUSSION

The only reason the diagnosis was questioned this time was because of the previous mistake.

The result as I saw him perhaps two or three weeks ago in the Out-Patient Department was very good. They had turned the mucous membrane of the inside of the mouth out enough to meet the skin very well. He had a good vermilion border, and the scars were not noticeable.

The case interested me because of the almost certainty of making a diagnostic error in a case like this. What else would one think of, where there had been a definite proved carcinoma a year and a half earlier at the same spot? I think that no one could possibly feel that that was a slip that was not excusable.

DR. CABOT: Weren't you surprised that excision of the chancre did not do more harm?

DR. CHEEVER: You are thinking of the work of Brown and Pearce, who showed that in rabbits that severity of the disease may be much increased by removing chancres. That has not been borne out so far as I know in the human cases. That was purposely done very frequently in the old days, and the keen observers of times past did not so far as I know make any such observations. And of course now since we know that the spirochetes enter the lymphatic channels and even the blood stream many days before the primary lesion starts to develop, we know that it is futile to remove it. The only primary lesions that are removed now are in the tonsils, where they are not recognized until after the operation. I have seen a number of those in the last few years, and I have not seen that the course of syphilis has been increased in severity. It seems as if it ought to be so, reasoning from rabbits, but it may not be.

A PHYSICIAN: I should like to ask if the period of six weeks in delay would not be rather a short time for the appearance of epidermoid cancer? Isn't that rather a short time? or is that an error, that it started six weeks before with a barber's cut?

DR. CHEEVER: I think probably the barber's cut had no connection with it at all. We often get cuts and tears in our lips, and we might happen to remember the last one we had, but I doubt if there is any relation there.

DIAGNOSIS

Epidermoid carcinoma of the lip.
Later, primary syphilis in operative scar.
Then recurrence of carcinoma.

WORK OF THE ROCKEFELLER FOUNDATION IN THE YEAR 1925

DURING the past year the International Health Board gave assistance to public health enterprises of various types in ninety-seven states and countries according to the Information Service of the Foundation. It participated in infection and sanitation surveys, operations for the control of yellow fever and hookworm disease, field studies and experiments in malaria control, county and rural health work, the development of special divisions of public health services, and the establishment and maintenance of schools and institutes of hygiene and public health. It also provided 197 fellowships for training in public health for men and women from twenty-seven countries, supported field stations for the training of prospective health officers in methods of malaria and hookworm control and in other public health work, and contributed funds to the Health Section of the League of Nations toward the support of international interchanges of public health personnel, the maintenance of an epidemiological and public health intelligence service, and the training of government health officials in vital and public health statistics.

YELLOW FEVER

THE Western Hemisphere was remarkably free from yellow fever throughout the year 1925, and this gave encouragement to the hope that eradication from the New World would soon be an established fact. No cases were reported during the year except in Brazil. (In April, 1926, an outbreak occurred near Parahyba, in northern Brazil.)

By the close of 1924, the infection had been brought under sufficient control in the Western Hemisphere to make it possible to release men and funds for work on the other side of the Atlantic. In May of the past year, Dr. Henry Beeuwkes, director of the new work, sailed from New York for Nigeria, West Africa. By the end of 1925, he had a staff consisting of a laboratory pathologist trained under Dr. Noguchi, three physicians experienced in yellow fever control, an entomologist, an experienced sanitary inspector, an office assistant, and a laboratory technician.

It will be necessary to define the extent and epidemiological characteristics of the infection. Surveys for this purpose have already been commenced in the Gold Coast and in two sections of Nigeria.—*Information Service of Rockefeller Foundation.*

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THE SHEPPARD-TOWNER ACT

A LETTER signed by the Editor of the *Medical Woman's Journal* states that a series of articles concerning the work that has been done in the various states under the Sheppard-Towner Act are to be published in that *Journal*. The Editor is an enthusiastic supporter of the Act.

Although forty-four States have accepted the provisions of this Act we are satisfied to be living in a State which has enough self respect to decline to be a partner in a scheme which levies taxes on all States in order to enable the government in co-operation with other States to carry on a function which each State should provide for itself.

We also feel that the functions of the government should be restricted so far as possible to maintaining those departments which are concerned directly with general problems because the multiplication of bureaus and commissions tends to destroy the independence and initiative of the component States. Above all, we feel that the government has plenty of opportunities to practice medicine in its military and naval departments and in the Public Health Service without encroaching on the personal

practice of medicine or the local problems of State Health Departments.

No State is so poor that it cannot meet the needs of its citizens. The Editor of the *Medical Woman's Journal* specifies Georgia, Alabama, Tennessee, Kentucky, the plains of the Western States, the fertile Valleys of Ohio and the densely populated districts of New York and New Jersey as presenting problems which must be met by the operation of the Act.

We can understand the desirability of the Government pointing out to any State deficiencies in its care of its citizens and this can be done perfectly well through existing agencies as, for example, the Public Health Service, and then if a State fails to meet local conditions the responsibility rests at home. So far as a government places a community under obligation, there will be many who will be content to let the Government come in and do the work which States and individuals should do for themselves. Individuals have been pauperized by well intentioned and misguided sympathy. Charity is a noble virtue when directed by sound common sense but unbalanced sympathy has done and continues to do harm.

One may be pardoned for a feeling almost akin to cynicism when noting that even New York with its tremendous wealth and high standards of public health activities is used as an illustration of the need for governmental aid in caring for mothers and children. So far as the South and West are concerned, these sections are prosperous and quite able to take care of themselves. The States in these sections are progressive and alert.

To repeat, we are glad to be living in a State which does not barter her self respect.

LONG DISTANCE QUACKERY

UNDER this heading *Hygeia* for July 1926 publishes an article in which the wiles of the quacks are set forth. The statement is made that the mail order swindler is able to operate and to get his victims because newspapers and magazines will furnish the point of contact between the sick and the swindler.

This JOURNAL has repeatedly called attention to the alliance of unscrupulous venders of proprietary medicine and newspapers. We have made an especial appeal to one influential newspaper in Boston suggesting the lack of ethics in accepting advertisements of those preparations which are making untrue claims of the efficacy of the so-called medicine. This journal has taken no notice of our protest. If physicians would take the time to place a marked copy of *Hygeia* in the hands of the editors of those papers which sell space to unworthy advertisers, some of these editors might be conscience stricken. The State protects the people against fraudulent weights and measures but the

law seems to be defective with respect to the control of the fraudulent claims of proprietary medicine manufacturers.

Comparatively few people read *Hygeia*. Physicians should advise the people about the dangers of procrastination which are often in evidence, due to blind belief in the potency of advertised so-called medicines. We are too much inclined to let the laity continue in ignorance.

Put *Hygeia* into the hands of your patients.

FIGHT AGAINST THE COMMON COLD

PRESIDENT F. P. Garvan of the Chemical Foundation in an address before the American Drug Manufacturers Association urged that organization to take the initiative in securing the co-operation of physicians, pharmacologists, chemists, pathologists, and bacteriologists for the purpose of studying the common cold and devising a remedy for it. This is a most laudable recommendation and it is possible that concentration of many students on this unsolved problem may lead to some practical results.

We suspect that the common cold is a complicated affair and not the simple process of disturbed function due to exposure. Some people will develop many so-called colds in a comparatively short period of time while others seem to be immune. While infection of some sort is present in this disorder, it is probably a superimposed invasion operating on a person with poor resistance either as a constitutional factor or as a temporary lowering of the protective powers. We have known persons who could expose themselves to inclement weather, insufficient clothing or wet feet with impunity, if the bodily functions were in good working order, but who were apparently made vulnerable if deprived of sleep or guilty of dietary indiscretions.

So-called colds exhibit such a variety of symptoms and are so often confused with the initial invasion of some well-known disease that the specific cause may be as it has been elusive. Before the scientific conception of disease existed most every case of typhoid fever or pneumonia, for example, was supposed to be the result of a vicious or neglected cold. Such was the somewhat common explanation of the doctor when the writer began practice. Although the classic of Dr. Oliver Wendell Holmes had been published for many years doctors believed that puerperal fever was caused by a cold operating on the especially susceptible patient. Even though those old fashioned ideas have been discarded, the common cold is a mystery yet to be solved.

It is a serious burden on humanity. Perhaps its etiology will be found to be as simple as that of typhoid when the right person gets after it. If the American Drug Manufacturers Association can create or inspire the effective re-

search body, it will have rendered a definite service.

REVOCATION OF A MEDICAL SCHOOL CHARTER

THE daily papers have stated that the charter of the Kansas City College of Medicine and Surgery has been ordered revoked by the State Supreme Court of Missouri.

In the opinion of Judge White the evidence showed that fifty or more diplomas had been sold by the school for profit. A similar case is pending against the St. Louis College of Physicians and Surgeons.

Both of these institutions have been rated in Class C and have been suspected of being more concerned in the revenue derived from fees than in medical education. They have been the resource of students who could not qualify for entrance into approved medical schools.

The peculiarity of the Massachusetts law obliges the Massachusetts Board of Registration to accept candidates for licensure to examination even after the standing of a medical school had been discredited, provided that the institution is legally chartered and gives a four years' course of instruction. The legislature has repeatedly refused to give the Board discretion with respect to quality of instruction. The aspiration of the medical profession to require better preparation for the practice of medicine has received little encouragement from our law makers.

It has been affirmed by some that the surest way for the medical profession to secure favorable legislation is to favor unsound legislation, because some persons seem ready to antagonize arguments submitted by physicians.

The revocation of the charter referred to above and the investigation of the other school have been brought about by non-medical interests. When the laity really wants protection the probability of improvement will be greater.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:—

GARLAND, JOSEPH, A.B., M.D. Harvard Medical School 1919; Visiting Physician to the Children's Medical Department of the Massachusetts General Hospital; Assistant in Pediatrics, Harvard Medical School; Secretary of the New England Pediatric Society. His subject is "Pediatrics in General Practice," page 107. Address: 270 Commonwealth Ave., Boston.

BARNEY, J. DELLINGER, A.B., M.D. Harvard Medical School 1904; F.A.C.S.; Chief of Service, Urological Department, Massachusetts General Hospital; Assistant Professor of Genito-Urinary Surgery, Harvard Medical School;

Consulting Urologist to the Salem Hospital, the Waltham Hospital, the Massachusetts Eye and Ear Infirmary, the Cable Memorial Hospital, Ipswich, the United States Marine Hospital, Chelsea, and the Gale Memorial Hospital, Haverhill; Member of the American Urological Association, the American Association of Genito-Urinary Surgeons and the International Urological Association. His subject is "Some Urological Causes of Abdominal Pain," page 111. Address: 87 Marlborough St., Boston.

BARRS, WILLIAM R., Ph.D., Assistant Professor in Physics and Acoustics, Massachusetts Institute of Technology, Cambridge;

EADE, WALTER F., Research Associate, Department of Aeronautics, Massachusetts Institute of Technology, Cambridge; and

FITZGERALD, EDMUND B., A.B., M.D. Harvard Medical School 1917; Clinical Assistant Physician, Children's Hospital; Assistant Physician, Children's Department, Boston Dispensary; Assistant in Pediatrics, Harvard Medical School. They write on "Stethoscopes," page 116. Address Dr. FitzGerald at 475 Commonwealth Ave., Boston.

HUBER, EDWARD G., A.B., M.D.; Dr.P.H.; Major in Medical Corps, U. S. A. His article on "The Control of Communicable Diseases Prevalent in Massachusetts with a Study of Mortality Due to Them During the Past Seventy-Five Years" is continued on page 122.

MORSE, JOHN LOVETT, A.B., A.M., M.D. Harvard Medical School 1891; Professor of Pediatrics Emeritus, Harvard Medical School; Consulting Physician at Children's Hospital, Infants' Hospital and Floating Hospital, Boston. Member New England Pediatric Society, American Pediatric Society, Association of American Physicians, etc. His subject is "Progress in Pediatrics," page 128. Address: 483 Beacon Street, Boston.

The Massachusetts Medical Society

MEMBERSHIP CHANGES

FROM JUNE 1, 1926, TO JULY 1, 1926

(See BOSTON MEDICAL AND SURGICAL JOURNAL, July 1, 1926, for changes made by the Council, June 8, 1926. The deaths have appeared in the columns of the JOURNAL, as reported.)

WALTER L. BURRAGE, Secretary.

Albert L. L., from New York City to Yonkers, N. Y., 5 Phillips Road.

Belamy, W. W., of Dorchester, now has his Boston office at 14 Charlesgate West, Hotel Canterbury.

Bennett, W. H., Jr., has moved from New Bedford (Bristol South) to Taunton (Bristol North), where he has an office at 50 Broadway.

Blackway, Charles E., Fall River, from Winter Street to 288 Locust Street.

Bossay, J. C., from Springfield (Hampden) to Lee (Werkshire).

Brown, Harry A., Whitinsville, restored by the Council, June 8, 1926.

Burrows, Marion C., Lynn, from 90 to 68 Ocean Street.

Collins, William M., Lowell, from 267 to 174 Central Street.

Crawford, Charles Henry, Lawrence, 42 Shattuck Street, was restored by the Council, June 8, 1926.

Cunha, M. F., Lowell, from 258 Merrimack to 174 Central Street.

Dainty, George W., of Monument Beach (Bourne) has been restored by the Council, as of June 8, 1926.

Dibbins, Samuel A., has moved from Lowell (Middlesex North) to Everett (Middlesex South), 3 Hancock Park.

Ely, Julian G., of New London, Conn., has moved to 41 Huntington Street.

Enebuske, Claes J., of Boston, now has a temporary address at Göteborg, Sweden, 21 Storgatan.

Findlay, Francis M., now has his Boston office at 475 Commonwealth Avenue.

Hanscom, R. F., from Dedham (Norfolk) to Washington, D. C. (Non-Resident List), 2633 Connecticut Avenue.

Heffernan, Roy V., Dorchester, has changed his Boston office from 519 to 524 Commonwealth Avenue.

Hipkiss, George, has moved from Noroton Heights, Conn. (Non-Resident List) to Brookline (Norfolk), 16 Euston Street.

Goldberg, Bernard L., Boston, from 491 Commonwealth Avenue to 483 Beacon Street.

Greene, David Dewey, Boston, has moved from 402 Marlborough Street to 466 Commonwealth Avenue.

Kahn, George, of Roxbury, now has an office in Boston, at 483 Beacon Street.

Leahy, George A., Lowell, from 477 Essex to 174 Central Street.

Maraldi, C. F., office now Roxbury, 300 Longwood Avenue.

McCarthy, Francis P., now has his Boston office at 375 Commonwealth Avenue.

McKechnie, Frederick J., Springfield, has moved his office from 307 to 1559 Main Street.

Mead, Frederick A., Willimansett, has moved from 30 Emerson to 835 Chicopee Street.

Mills, A. E., Medford, from 9 Wicklow Avenue to 1048 Fellsway.

Moran, Charles L., from Brighton (Middlesex South) to Brookline (Norfolk), 150 Amory Street.

Morse, Joseph L., still has a residence in Roxbury and a temporary address at 224 East Eighteenth Street, New York City.

Mossman, George, has moved from Westminster to Gardner, office 7 East Broadway.

Pulsifer, Nathan, of Lowell, has moved his office from Middlesex Street to 174 Central Street.

Randall, F. D., Malden, from 12 Maplewood Street to 674 Salem Street.

Robins, S. A., Roxbury, office now Boston, 636 Beacon Street.

Salls, F. H., has moved from Lawrence (Essex North) to Hopedale (Worcester), 12 Mendon Street.

Sims, F. R., has moved from Augusta, Ga., to Little Rock, Ark., U. S. Veterans Hospital.

Stansfield, Oliver H., Worcester, has moved from 22 to 36 Pleasant Street.

Stearns, Charles M., of 116 Hawthorne Street, Chelsea, has been restored by the Council, as of June 8, 1926.

Stettler, Wayne D., has moved from Fitchburg (Worcester North) to Slatington, Pa. (Non-Resident List), 356 First Street.

Tedford, Ada H., now has a temporary address at Peabody, 151 Lynnfield Street.

Walker, Clifford B., Springfield, has moved his office from 317 Main to 1537 Main Street.

Wilder, Ella A., of Middletown, Conn., now has her office at 79 Crescent Street.

MISCELLANY

THE WILLIAM BEAUMONT MEMORIAL FUND

To encourage investigations of alimentary tract function, Dr. Frank Smithies, Chicago, has presented to the School of Medicine of the University of Illinois, bonds in amount sufficient to yield annually, in perpetuity, not less than \$100.00. This fund is known as "The William Beaumont Memorial Fund" and the income therefrom, as "The Annual Beaumont Memorial Award."

The Award is to be made each year to the research or clinical investigator, who, in the judgment of a Faculty Committee, has contributed the most important work during the year, in the field designated.

The first Award will be made in 1927. Manuscripts covering investigations do not have to be entered specifically for the Award nor is it required that they be submitted to the Faculty Committee. The Award is to be granted by the Committee after it has considered carefully all investigations published during any year in periodicals throughout the United States. Thus, the Award is available to workers in any institution, and is not confined to members of either Faculty or Student body of The University of Illinois.

ANNUAL REPORT OF THE NEW ENGLAND DEACONESS ASSOCIATION

THE 1925 report of the New England Deaconess Association calls to our attention the astoundingly rapid increase in the activities of this organization. In 1900, the number of beds in the hospital was 14; in 1925, the Boston hospital and the Palmer Memorial contained accommodations for 215 patients. The Association at the end of 1925 possessed net assets of about one million dollars.

The Deaconess Hospital, while caring for the usual surgical and medical cases, has developed into an institution particularly known for the treatment of two diseases—goitre and diabetes, including the surgical complications of the latter. In 1925, the number of diabetics admitted (including readmissions) was 752; among these there was but two deaths. Extensive research has been carried out in certain gastroenterological diseases.

The Hospital Staff examined the 495 students of the Medical School, and, as a practical lesson in dietetics, furnished members of the third year class with three dietetic luncheons at a nominal price. A Dental Service has been established whereby patients, nurses and employees may have dental examination and the necessary treatment while in the hospital. A nurse has been detailed to administer ultra-violet ther-

apy to selected cases. The Diabetic Store, started some years ago, has now been transferred to the hospital.

During the year 1925 the Palmer Memorial Hospital (for chronic cases) cared for 83 patients. The demand for beds far exceeded the supply; this need will be cared for to a large degree by the new Palmer Memorial Hospital, which will have for one of its major objects the treatment and care of patients with cancer.

SOME INTERESTING FACTS RELATING TO MEDICAL MEN AND AFFAIRS

In the small folder issued by the Sesqui-Centennial International Exposition celebrating 150 years of American Independence, the following facts are noted:

- 1732—Philadelphia Hospital and Insane Asylum established.
- 1736—Franklin's son died. Small-pox. Franklin said "I regret he was not inoculated."
- 1745—First American Medical Journal—Cadwalader's "Treatise on the West India Grippe."
- 1751—Penna. Hospital for Poor Sick Persons.
- 1762—Dr. Wm. Shippen Lectures on Anatomy.
- 1765—Medical School University of Penna. Founded. Dr. John Morgan Lectures on Medicine.
- Philadelphia County Medical Society organized.
- 1768—First American Diploma Awarded in Medicine.
- 1769—Dr. Benj. Rush, Prof. of Chemistry, Univ. of Penna.
- 1773—American Medical Society founded. Existed until 1793, Dr. Wm. Shippen, Jr., President in 1790.
- 1786—Philadelphia Dispensary Founded.
- 1787—College of Physicians of Philadelphia founded.
- 1788—Action Initiated Towards Preparation of a Pharmacopoeia.
- 1793—J. G. Mancrede first to Propose Caesarean Section.
- Special Meeting of Physicians to Study Yellow Fever.
- Dewees, noted Obstetrician began Practice in Philadelphia.
- 1794—Committee of Physicians consider Health Laws.
- 1804—Medical Lyceum.
- 1805—Dr. Philip Syng Physick in Chair of Surgery, University of Penna. (Pupil of John Hunter.)
- 1818—T. Hensen Prepared first and second U. S. Pharmacopoeia.
- 1825—Jefferson Medical College.
- 1831—Dr. Philip Syng Physick operated for gravel on Chief Justice Marshall (Removed over 1000 Calculi).

- 1834—Wills Eye Hospital.
1848—Hahnemann Medical College Organized.
1850—Eclectic Medical College of Penna. Chartered First Woman's Medical College in the World.
Philadelphia Lying-In Asylum Organized.
1863—Beginning of Medical Specialization. Laryngology one of the First.
1864—Clinics at Penna. General Hospital opened to Mixed Classes.
1874—First Teaching Hospital (Univ. Medical School).
1877—Jefferson Hospital (Original) Built.
1882—Directory of Nurses.
1883—Veterinary School and Hospital (Univ. of Penna.).
1891—Committee to Advocate State Board of Medical Examiners and Licensers.
1893—First Case of Hookworm Disease reported in Philadelphia.
1915—Dental School (Evans Institute) Univ. of Penna.
1916—Graduate School of Medicine (Univ. of Penna.).

RECENT DEATH

BROOKS—Dr. EDITH MAY BROOKS, formerly of 483 Beacon Street, Boston, a Fellow of the Massachusetts Medical Society since 1906, died at Newton, July 1, 1926. She was a graduate of Tufts College Medical School in 1902, practised obstetrics and gynecology and was a member of the American College of Surgeons.

OBITUARY

DR. AMOS GALE STRAW

AMONG the distinguished medical men of New Hampshire who have passed on to their reward there were probably none more loved than Dr. Amos Gale Straw of Manchester, N. H., who died at his home in that city March 13, 1926. Dr. Straw was born in Manchester, N. H., Feb. 9, 1864, the son of Daniel F. and Lucretia Ann Kenney Straw. He received his early education in Manchester and graduated from the Manchester High School. He was later graduated from Dartmouth College and Harvard Medical School, completing his medical education in the Massachusetts State Hospital. Dr. Straw achieved wide reputation as a Roentgenologist, in which capacity he went over seas with the Harvard unit during the World War. At the time of his death Dr. Straw was Roentgenologist to the U. S. Veterans Bureau Hospital, Northampton, Mass. Achieving great success and fame in his chosen profession Dr. Straw was best known among his associates as the prince of good fellows. Genial, kind-hearted, sympathetic, upright and honorable,

and a musician of note he was always a general favorite in the community and much sought.

Dr. Straw's family consisted of his wife, Dr. Zatae L. Straw; two daughters, Enid C. and Zatae Gale Straw; a foster daughter, Gertrude M. Grey; two sons, Wayne C. and David Gale Straw. These with a wide circle of friends are left to mourn his loss.

CORRESPONDENCE

FALL RIVER SPEAKS FOR ITSELF

Editor, Boston Medical and Surgical Journal:

The attention of the staff of the Union Hospital in Fall River, Mass., has been called to a letter from Dr. Woodward in your issue of June 24 in which it was stated that "a number of physicians in Fall River were in favor of 'breaking down the vaccination laws.'" At a meeting of this staff held on July 3, 1926, it was the unanimous vote of some thirty physicians present, recorded by rising, that the vaccination laws should not be "broken down."

Since Jenner disclosed the value of vaccination or inoculation in combating disease, by demonstrating it with relation to smallpox, thousands of lives have been saved by inoculation against diphtheria, typhoid fever, lockjaw, hydrophobia, pneumonia and other infections. It is incomprehensible that any man of medical education should set his opinion against the universal opinion of leaders in his profession in a matter which is of so much concern, in the preservation of life and health.

Very truly yours,

E. A. MCCARTHY, M.D.,

President of Staff, Union Hospital.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING JUNE 26, 1926

Diphtheria	13	Cerebrospinal meningitis	1
Last week	15	Chickenpox	39
Diphtheria bacilli carriers	4	Encephalitis, epidemic	1
Whooping cough	33	German measles	24
Last week	53	Mumps	5
Typhoid fever	1	Pneumonia, lobar	26
Last week	3	Tetanus	1
Scarlet fever	49	Tuberculosis, pulmonary	40
Last week	78	Tuberculosis, other	4
Smallpox	1	Gonorrhea	11
Last week	0	Syphilis	12
Measles	244	Bronchopneumonia	24
Last week	349		

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEKS ENDING JUNE 26 AND JULY 3, 1926

	Weeks ending June 26	July 3
Anterior poliomyelitis	—	1
Chickenpox	167	101
Diphtheria	67	47
Dog-bite	15	2
Encephalitis lethargica	3	3
Epidemic cerebrospinal meningitis	4	3
German measles	132	89
Gonorrhea	118	78
Influenza	8	2

Measles	580	417
Mumps	105	97
Ophthalmia neonatorum	5	25
Pneumonia, lobar	60	56
Scarlet fever	191	241
Septic sore throat	1	1
Suppurative conjunctivitis	11	10
Syphilis	38	32
Tetanus	1	1
Trachoma	1	—
Trichinosis	2	1
Tuberculosis, pulmonary	138	146
Tuberculosis, other forms	18	11
Tuberculosis, hilum	5	9
Typhoid fever	6	3
Whooping cough	172	126

REPORTS AND NOTICES OF MEETINGS

HAMPSHIRE DISTRICT MEDICAL SOCIETY

THE July meeting Hampshire District Medical Society was held Wednesday, July 14, at 11.30 A. M., at 203 Bridge St. The paper of the day was given by Dr. Charles E. Perry of Hartford on "Pneumonokoniosis." Miss Koch, R.N., of Greenfield addressed the Fellows on "The Child-Welfare Conference."

L. O. WHITMAN, *Sec'y.*
W. B. SEGUR, *President.*

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

A MEETING of this society was held at Gardner State Colony on Wednesday, July 14th, 1926.

C. H. JENNINGS, *Sec'y.*
W. E. CURRIER, *Pres.*

A MEETING TO DISCUSS MASSACHUSETTS MEDICAL SOCIETY ACTIVITIES

ON Tuesday, June 29, 1926, on invitation of President James S. Stone, the officers of the District Societies and a few others met at the Harvard Club. After the luncheon Dr. Stone outlined the important work before the Society for the coming year. After reviewing the successful features of the Springfield Meeting the opinion of the guests was solicited with reference to any changes or additions which might tend to make the next annual meeting equally successful.

Reference was made to the evidence of cordiality existing among the New England State Medical Societies as shown by the presence of other societies at our annual meeting and it was suggested that the recommendation of Dr. Parker, President of the New Hampshire Medical Society, that a council be formed consisting of representatives of all the New England Societies, was endorsed.

The plans for legislation were fully presented comprising the subject of compulsory vaccination for private as well as public school pupils.

the elimination of the restrictive feature in the appointment of members of the Board of Registration in Medicine, the raising of the standards of medical education, the passage of the lye bill so-called, the opposition to special examining and licensing boards and the report of Dr. Painter's Committee which will come up for action at the October Council meeting.

The subject of increasing the interest of members in district meetings was fully discussed as well as plans tending to induce all leading reputable practitioners in the State to become affiliated with the Society.

President Stone explained the responsibilities imposed on the Commissioner of Public Health in the action of the legislature with respect to the use of a part of Norfolk Hospital and the development of cancer clinics throughout the State. Remarks by some showed there is a definite desire to have more definite information about candidates for the legislature and especially the attitude of such persons toward public health and other medical matters.

Dr. Burrage showed the programs published by many of the States explaining the particular features of those of unusual length and arrangement. Many of the company participated in the discussion.

The intimate knowledge of all the matters under discussion shown by the President and his enthusiasm in the exhortation to strive to create more general activity on the part of all members of the Society brought about active and intelligent discussion of the subjects presented.

There were favorable opinions expressed with respect to increasing the number of days to be devoted to the annual meeting with the introduction of hospital clinics, including operative, dry and diagnostic. A meeting of the officers of the Society was already scheduled to consider the program before which the opinions expressed were to be presented. Considerable concern was expressed because of the difficulty of getting full attendance at the District Meetings.

The following named persons were present in addition to the President, J. S. Stone:—

J. L. Chute, Secretary, Barnstable District.
George H. James, President, Hampden.
W. B. Segur, President, Hampshire.
Luther O. Whitman, Secretary, Hampshire.
Victor Safford, Norfolk.
R. V. Baketel, President, Essex North.
J. Forrest Burnham, Secretary, Essex North.
E. P. Joslin, President, Suffolk.
A. H. Crosby, Secretary, Suffolk.
L. S. McKittrick, Suffolk.
Thomas J. O'Brien, Suffolk, Secretary of Committee on State and National Legislation.
W. E. Currier, President, Worcester North.
S. E. Donovan, President, Bristol South.
George E. Borden, Secretary, Bristol South.
C. W. MacDonald, President, Norfolk.
W. G. Curtis, President, Norfolk South.

Ralph R. Stratton, President, Middlesex East.
A. R. Cunningham, Secretary, Middlesex East.

A. S. MacKnight, President, Bristol North.
Joseph L. Murphy, Secretary, Bristol North.
Charles H. Phillips, President, Essex South.
Ralph E. Stone, Secretary, Essex South.
A. C. Smith, President, Plymouth.
W. L. Burrage, Secretary, Massachusetts Medical Society, Norfolk District.

W. P. Bowers, Managing Editor of the *BOSTON MEDICAL AND SURGICAL JOURNAL*.

The interest was so pronounced that the meeting was much longer than such gatherings usually are and there was not a dull moment. The result will be shown in the greater activities of the Societies represented.

BOOK REVIEWS

Facts On The Heart. By RICHARD C. CABOT. Illustrated. 781 pages. W. B. Saunders Company, Philadelphia and London, 1926.

Again Dr. Richard Cabot's writings have stimulated medical discussion, this time about the very important subject of the correlation of pathological and clinical data in cardiovascular disease. The volume entitled "Facts on the Heart" indeed contains many interesting facts gleaned from autopsy material at the Massachusetts General Hospital; there are also perforce theories to explain some of these facts. The findings are invaluable; the theories may not all endure. The author advises most readers to omit much of the book but to read the opening and the closing chapters and the section summaries. The reviewer believes that the chapters themselves, omitting most of the case histories, should be read rather than simply the summaries in the opening and closing chapters, for in the body of the book the findings are discussed in detail in a very interesting and profitable manner while in the first and last chapters they are abbreviated and qualified somewhat by theories propounded by the author.

The book is based on an analysis of 1906 cases out of 4000 autopsied at the Massachusetts General Hospital from 1896 to 1919. These 1906 cases were all those showing some cardiovascular lesion. Among them there were a total of 4143 such lesions. A consideration is made of valvular disease, syphilitic aortitis, cardiac hypertrophy and dilatation, coronary disease, angina pectoris, endocarditis, pericarditis, and congenital defects. There are reprinted from the Cabot Case Records and other reports from Massachusetts General Hospital the histories of over a hundred cases illustrating various conditions. These case histories comprise about half of the bulk of the book.

It is of course to be recognized at the outset that only one phase of cardiovascular disease is discovered at the autopsy table, a very important one to be sure but not the whole story. There are some important facts that are missed by the pathologist, at least at present; these are some of the functional disturbances of the circulation as well as some of the etiological factors back of the cardiovascular lesions. Such important facts as auricular fibrillation, pulsus alternans, angina pectoris, and often hypertension and beginning failure cannot be diagnosed from postmortem data.

Hospital statistics like these collected at the Massachusetts General Hospital in days gone by represent one group in one local (New England) community, although that of course is a large one. Obviously then they cannot be considered as representative of cardiovascular disease either in our own entire community, or in the country or world at large. Eventually when wards for all classes in society as represented financially, are constructed at the Massachusetts General Hospital and in other large hospitals also, then hospital statistics may be considered to give a more accurate idea of community health. Even then however the aged will probably figure in too low a number in the hospital; with the arteriosclerosis of old age they will continue to die at home. Arteriosclerotic heart disease and angina pectoris are much more common in private than in hospital practice and in out-patient than in ward services. Necessarily therefore Dr. Cabot fails to note the great importance of coronary sclerosis as a cause of heart disease in older people. Even in the cases which are called hypertensive probably coronary sclerosis frequently enters as an appreciable, perhaps at times as a vital factor. Certainly it is a much more important cause of heart disease in New England than is syphilis. Arteriosclerotic heart disease should be ranked in New England with rheumatic and hypertensive to form the trio of important etiological factors.

An interesting illustration of the changing character of hospital ward patients is evidenced by the comparison of the incidence of angina pectoris at the Massachusetts General Hospital 40 to 50 years ago and now. As Osler had found in other large hospitals, about one case of angina pectoris was admitted to the wards of the Massachusetts General Hospital every year in the 70s and 80s while now an average of over 25 cases of angina pectoris is admitted every year. This does not include the cases in the Phillips House, the private ward. Certainly this difference can be explained neither by more accurate diagnosis (which might account for a slight increase) nor by an increase in the size of the hospital, which has been but slight.

Another fact of interest in showing the difficulty of drawing conclusions about the inci-

dence of various types of heart disease for the whole country or other parts of the world from the Massachusetts General Hospital figures is that in the southern part of the United States, in the Hawaiian Islands and in the Philippines rheumatic heart disease is relatively rare, and syphilitic and hypertensive heart disease relatively more common.

It is important, as Dr. Cabot has pointed out, in correlating the pathological with the clinical data in these cases to know the condition of the patients when they were examined. But it is also important to know who examined them. Were they moribund? Did they have some acute or chronic surgical condition requiring operation with but hasty or superficial examination of the heart? Were they examined by relatively untrained internes only, or by surgeons, by dermatologists, by the visiting physicians on the general medical services, or by internists especially interested and trained in cardiovascular disease? It is obvious that all these questions make a great deal of difference in the interpretation of the correlation of pathological with clinical diagnoses in cardiovascular disease at a large cosmopolitan hospital like the Massachusetts General. Errors in diagnosis may vary astonishingly under different circumstances although it is certainly true that pericarditis, tricuspid valve lesions, and luetic aortitis without symptoms or signs are notoriously difficult to diagnose under any conditions. Of course many lesions such as slight sclerosis of aorta or coronary arteries, non-deforming endocarditis of the valves, and slight so called hypertrophy and dilatation of the heart are bound to be missed clinically and are usually of little or no importance anyway.

Hypertrophy of the heart without valvular disease, adherent pericardium or definitely known hypertension is considered by Dr. Cabot to be hypertensive in origin. Probably it is often but we must maintain an open mind about it until we know more. It is conceivable that other factors may cause it, especially overwork of other types, as in the case of persistent tachycardia or increased output per beat or overactivity of the remaining good heart muscle when some of the myocardium is destroyed in coronary sclerosis and occlusion.

Mitral regurgitation without stenosis is rare at the autopsy table as Dr. Cabot shows, but he fails to take into consideration, when he speaks of its great rarity clinically, the children who show the condition early in rheumatic heart disease before they develop much mitral stenosis or any aortic regurgitation. It is certain that in such cases the mitral systolic murmur cannot be disregarded. These children with early changes in the mitral valve do not come to autopsy except rarely and then only by accident; they are not sick enough to die. Twenty

years later with their valves stenosed they appear in Dr. Cabot's statistics.

However, in spite of these criticisms which are of course concerned only with the interpretation of some of the facts on the heart, the reviewer considers the study of the book a valuable one, not only because of the information in it but because of the stimulation derived from its perusal.

A Manual of Normal Physical Signs. By WYNDHAM B. BLANTON, B.A., M.D., Richmond, Virginia, Associate in Medicine, Medical College of Virginia. St. Louis: The C. V. Mosby Company, 1926.

This small volume is a list of regional land marks and of a great number of items which are noted in the course of physical examination of all parts of the body. Some explanation is included as to the mechanism of production of certain signs and as to the technique of eliciting them. The signs of disease are omitted. While its contents are very complete, the list-like form does not lend itself to emphasis upon matters of primary importance and subordination of matters of secondary importance. In itself, therefore, it does not seem to be intended as a book to be read separately but rather as a framework about which courses in physical diagnosis can be constructed. It deserves mention, therefore, chiefly to call it to the attention of those who teach physical diagnosis.

Surgical Clinics of North America—April, 1926
—San Francisco Number. Vol. 6., No. 2.
W. B. Saunders Company.

This volume conforms in style and general arrangement to those preceding it. It is a little fuller than some: containing 250 pages and 73 illustrations, all of which are very good. There are contributions from 20 different clinics and 24 different authors.

The articles of particular note are, The Treatment of Squamous Epithelioma of the Cervix, by Dr. F. W. Lynch; An Experimental Study of the Pathogenesis of Hydronephrosis, by Dr. Frank Hinman; Intrapleural Pneumolysis, by Dr. Leo Eloesser; An Instrument for Locating and Draining Hepatic Abscess, by Dr. P. K. Gilman; Hallux Valgus and Hammer Toe, by Dr. L. W. Ely; The Diagnosis of Varicose Veins of the Female Pelvis, by L. A. Emge; Inversion of the Uterus, by Dr. A. F. Maxwell; Neck Dissections, by Dr. C. L. Callender (very well illustrated); and Wound Infections and Right Subdiaphragmatic Abscess, by Dr. J. H. Woolsey.

These articles are all carefully prepared and concisely presented and make this volume one of the best recently published.